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AUTOMATED CLOTHING SIZE DETERMINATION FOR U.S. COAST GUARD RECRUITS

by
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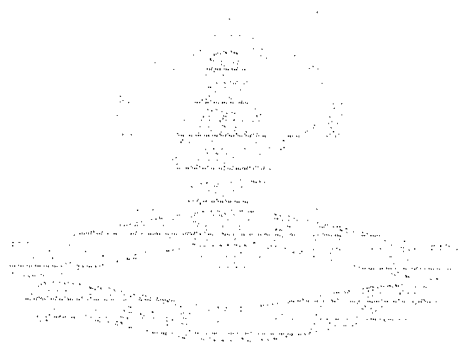


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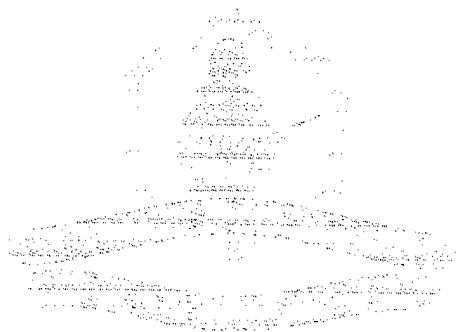
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Preface

This project was the first use of the Anthropometric Measuring System (AMS) in an operational environment in the United States. It was conducted under the direction of the U.S. Coast Guard Chief Clothing Designer, Joseph DeBlase. The main purpose was to evaluate how well the AMS, once programmed, determined the proper size of an item for an individual. Programming requires translating traditional sizing tables into a very specific format for automation, which is often not as simple as one might assume.

The recruits at the U.S. Coast Guard Training Center, Cape May, New Jersey, and the staff of the Uniform Distribution Center, Cape May, New Jersey, under the leadership of CWO Steven Harrell, were instrumental to the successful execution of this project.



1. Introduction

In 1998, the Ergonomics Team (Anthropology), Natick Soldier Center, U.S. Army Soldier & Biological Chemical Command acquired an Anthropometric Measuring System (AMS), which is a mechanical and electronic hardware and software system for obtaining human body measurements and determining appropriate clothing sizes based on those measurements. The South African National Defense Force uses the AMS for uniform issue to military personnel, and it could potentially benefit U.S. military clothing issuing and logistics organizations.

At the request of the Chief Clothing Designer of the U.S. Coast Guard, a field evaluation of the AMS was conducted at the Uniform Distribution Center (UDC), Coast Guard Training Center, Cape May, New Jersey, from May 2000 through November 2000. The objectives of this study were to evaluate the accuracy of the size prediction software, which had been previously programmed for specific Coast Guard clothing items, to assess the basic operation and functionality of the system, and to determine any potential for future use of the AMS by the Coast Guard.

Before actually using the AMS to measure recruits and issue clothing, I observed the current UDC measurement and issue process to become familiar with the various clothing items and the concept of measurement, sizing, and fit for each. The clothing issue process consists of an initial issue to a company of recruits on their first day at the training center, and a second issue five weeks later. Males and females are processed separately at the same time.

Prior to the initial issue, recruits receive athletic shorts, t-shirts, sweat pants, and sweat shirts from the exchange. They wear the shorts and t-shirts during the initial measurement and issuing process. At the initial issue recruits record their height and weight on a size slip. These are self-reported values, not measurements. A contracted tailor then measures chest or bust circumference, waist circumference, hip circumference, neck circumference, and sleeve length for each recruit. UDC personnel record the measurement values on the size slips. Based on those values the tailor then indicates a size for work shirt and work pants, and a length used for several other clothing items. UDC personnel record these sizes on the size slip. Recruits take their size slip and go through the warehouse where they receive utility trousers. They try on the utility trousers, and the fit is checked by the tailor who also marks the trousers if a minor waist or seat adjustment is needed and measures the outseam value need for the bottom leg hem. If the tailor determines a different size is needed, the recruit exchanges the trousers and repeats the process. The recruits then take their size slips and make two more trips through the warehouse where they get light blue long-sleeve and short-sleeve shirts, a utility jacket, a windbreaker, dress shoes, safety boots, running shoes, boot socks, long-sleeve and short-sleeve utility shirts, a garrison cap, and a swim suit. The garrison cap is fitted by warehouse personnel at the start of the last pass through the warehouse. The recruits then try on the long sleeve light blue shirt, utility jacket, windbreaker, shoes, and boots. If an item does not fit properly, warehouse personnel check the fit, and the recruit exchanges the item for another size if needed. Once all items are fitted, recruits enter the sizes of the items on an inventory form.

The second issue is for dress clothing items. Recruits are not measured at the beginning of the issue process to determine clothing item sizes. Prior to the issue, the contracted tailor records the sizes to be issued for the dress coat, dress pants, dress skirt, and white shirt on the size slip based on the measurements and sizes recorded from the first issue. Warehouse personnel select the items for each recruit and put them out on the issuing tables before the

recruits arrive. When the recruits arrive, they first put on the white shirt and dress pants. The tailor checks the fit and marks the pants for any alterations and for the bottom leg hem. The recruits then try on the dress coat and the tailor checks the fit. If the selected size does not fit properly, the tailor instructs the recruit to try a different size and return to check the fit again. Once the recruit has a coat that fits, the tailor marks the garment for any alterations. The tailor then tells the recruit which size trench coat to try. Warehouse personnel evaluate the fit of the trench coat. The recruits then record the sizes of all issued items on the second issue inventory form.

2. Methods & Materials

A. The AMS

The AMS (Figure 1) is a hardware and software system developed and manufactured by Ergotech Ergonomic Consultants in South Africa. The hardware is used to obtain body measurements that are automatically entered into the software. It can directly measure stature, weight, crotch height, foot width, foot length, and up to 50 other length or circumference measurements. The software records individual personnel data and measurement values, and determines clothing sizes from the measurement values. All of this information is stored and can be used for creating various reports. Individual printouts (Figure 2) are generated for clothing issue.

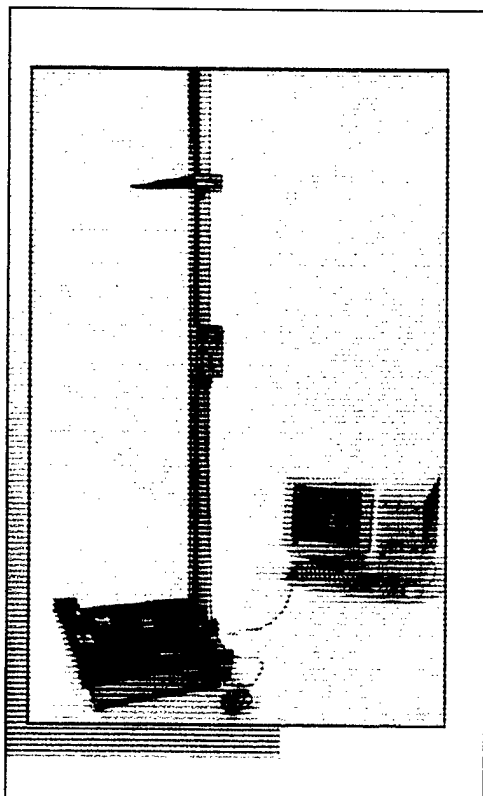


Figure 1. AMS (photo by Ergotech)

Size Allocation List			10/01/2001
Force Number:	152		
Surname:	A		
Initials:	A		
Home Unit:	0	None	
Issue Unit:	01	COAST GUARD UNIFORM DIST. CENTER	
Course Number:	Charlie		
Measurement Parameters	Metric	Imperial	
WEIGHT	64	141.12	
STATURE	1717	87.60	
FOOT_W	93	3.68	
FOOT_L	255	10.04	
HEADCIRC	541	21.30	
NECK	374	14.72	
CHEST	914	35.98	
WAIST_O	745	29.33	
SLEEVE	851	33.50	
Article no	Description	Size	
M-01	Utility Trousers	30 Reg	
M-02	Utility Shirt Short Sleeve	Small	
M-03	Utility Shirt Long Sleeve	Small 34	
M-05	Light Blue Long Sleeve Shirt	15 x 34	
M-09	Garrison Cap	6 7/8	
M-10	Utility Jacket	Small Reg	
M-11	Windbreaker	38 Reg	
M-12	Light Blue Short Sleeve Shirt	15	
X-00	Weight	Measured	
X-01	Foot Length and Width	Measured	

Figure 2. Individual Clothing Size Printout

In order to function , the AMS software requires specific information for each size of each clothing item. First, the measurements used to size a particular item are needed. For example, utility trousers are sized by waist circumference and stature. Then, for each size of that item, value ranges for the sizing measurements must be specified. For example, a waist circumference measurement of greater than 838mm and less than or equal to 889mm along with a stature measurement of greater than 1675mm and less than or equal to 1777mm, will result in a predicted size of 34 Regular trousers. The initial information for the size programming was based on the U.S. Coast Guard Uniform Fitting & Alteration Manual, COMDTINST M1020.7A, March 25, 1999, and on information provided by the Uniform Systems Branch. Ergotech did the original AMS programming. Some additions and changes to the programming were made based on observations of the issuing process and the actual clothing items and sizes stocked and issued at the Uniform Distribution Center (UDC).

B. The Sample

The current measurement and issue process at the UDC did not make it possible to measure all the recruits at a given issuing session with the AMS. A sampling strategy was devised in an effort to cover as great a size range possible in the fewest total number of subjects expected to provide meaningful results (Tables 1 & 2). The sample size was based on a standard statistical formula used to provide estimates of the mean and the 5th and 95th percentiles, using waist circumference data from the 1988 Army anthropometric survey (Gordon et al., 1989). That result was then used in a theoretical tariff, calculated on the intervals shown in Tables 1 & 2, and based on data for males and females under age 25 from the 1988 Army anthropometric survey. Finally, a minimum of 3 was set for each tariff interval, or sampling cell, giving the final sample totals of 150 males and 108 females.

Table 1. Male Sample Goal

Total 150	WAIST							
	< = 29	29 - 31	31 - 33	33 - 35	35 - 37	37 - 39	39 - 41	> 41
STATURE								
< = 5' 6"	3	3	3	3	3	3	3	3
5' 6" - 5' 10"	3	11	11	11	7	5	5	3
5' 10" - 6' 1"	3	5	9	9	7	5	5	3
> 6' 1"	3	3	3	3	3	3	3	3

Table 2. Female Sample Goal

Total 108	BUST							
	<= 32	32 - 33	33 - 34	34 - 36	36 - 37.5	37.5 - 39	39 - 41	over 41
STATURE								
<= 5' 4"	3	5	7	11	7	5	3	3
5' 4" - 5' 7"	3	3	5	9	7	5	3	3
> 5' 7"	3	3	3	5	3	3	3	3

C. Clothing Issue

Once the AMS was programmed and set up at the UDC, it was used to measure selected recruits at several initial issue sessions from September 2000 through November 2000. (Table 3). Those selected filled out personnel data forms that included a predetermined ID number. In order to save time, no personnel data was entered into the AMS. Rather, prior to issuing, mock data was entered which included the ID numbers from the data forms. When a recruit was to be measured, only the ID number had to be entered into the AMS to start the measurement process. Recruits wore socks, PT shorts and T-shirts during the measurement process.

Table 3. Field Test Schedule

<u>COMPANY</u>	<u>N Males</u>	<u>N Females</u>	<u>DATE</u>
H-I-158	15		30-Aug-2000
N-O-158	46	17	20-Sep-2000
Q-158	22	11	4-Oct-2000
S-158	29	3	18-Oct-2000
W-158	31	10	8-Nov-2000
Total	143	41	

The measurements taken for males included weight, stature, head circumference, neck circumference, chest circumference, waist circumference, sleeve length, foot width and foot length. The AMS determined sizes for utility trousers, utility shirts (short and long sleeve), light blue shirts (short and long sleeve), utility jacket, windbreaker, and garrison cap for the first issue. Sizes were also determined for dress trousers, dress coat, trench coat, white shirt, and hat frame. Male recruits were issued their initial clothing items based on their AMS printouts. The recruits tried on the items to assess the fit, and size changes were made if needed.

Female recruits were measured as time permitted, most often at the end of the issuing process. The measurements taken for females included weight, stature, head circumference, neck

circumference, bust, waist circumference, hip circumference, sleeve length, foot width, and foot length. The AMS determined sizes for light blue shirts (long and short sleeve), utility slacks, utility shirts (long and short sleeve), garrison cap, utility jacket, and windbreaker for the first issue. Only one group of females, Q-158, were measured prior to issue and were issued clothing based on the AMS. Sizes were also determined for dress coat, dress slacks, dress skirt, combo cover, and white shirt.

All issue documentation was collected for all recruits present, whether measured with the AMS or not. This included the tailor size slip and the issue inventory. The size slip is the current record of body measurements taken by the contracted tailor. It is filled out by UDC issuing personnel and used for size determination and alterations. The inventory is the record of items and sizes actually issued to a recruit. The recruit fills it out after trying on the clothing and making any needed size changes. The AMS was not used during the second, or dress issue process. The second issue inventories from the same companies were later collected for comparison with AMS data. Sample documentation is presented in Appendix A.

3. Results

Since the total number of females was small, and only 11 were actually issued clothing based on the AMS, no analysis was done on female data. The results presented here apply only to males and to male clothing items.

A. Sample

The total male sample was 7 less than the total sampling goal, and there were some cells that were over sampled while others were under sampled (Table 4). A summary of the measurement values is presented in Table 5. A more detailed analysis of the sample is presented in Appendix B.

Table 4. USCG Male Sample Compared to Sampling Goal

Shaded cells indicate goal was met or exceeded.									
Total	WAIST								
AMS: 143 Goal: 150									
	<= 29	29 - 31	31 - 33	33 - 35	35 - 37	37 - 39	39 - 41	> 41	
STATURE									
<= 5' 6"	2 3	5 3	4 3	2 3	1 3	1 3	0 3	0 3	
5' 6" - 5' 10"	3 3	14 11	12 11	16 11	10 7	9 5	0 5	0 3	
5' 10" - 6' 1"	1 3	3 5	13 9	11 9	8 7	6 5	4 5	0 3	
> 6' 1"	0 3	2 3	3 3	2 3	6 3	3 3	2 3	0 3	

Table 5. USCG Male Sample Summary Statistics

<u>Measurement</u>	<u>N</u>	<u>Minimum</u>		<u>Maximum</u>		<u>Mean</u>		<u>Std. Deviation</u>	
		<u>mm</u>	<u>inches</u>	<u>mm</u>	<u>inches</u>	<u>mm</u>	<u>inches</u>	<u>mm</u>	<u>inches</u>
STATURE	143	1608	63.3	1916	75.4	1769.2	69.65	70.0	2.76
CHEST	143	804	31.7	1108	43.6	965.4	38.01	68.4	2.69
NECK	143	358	14.1	463	18.2	409.2	16.11	23.1	0.91
HEADCIRC	143	520	20.5	606	23.9	561.9	22.12	16.7	0.66
SLEEVE	142	701	27.6	896	35.3	809.7	31.88	38.4	1.51
WAIST_O	143	680	26.8	1038	40.9	856.2	33.71	77.3	3.04
		<u>kg</u>	<u>lbs</u>	<u>kg</u>	<u>lbs</u>	<u>kg</u>	<u>lbs</u>	<u>kg</u>	<u>lbs</u>
WEIGHT	108	49	107.8	108	237.6	75.3	165.70	11.6	25.61

B. Initial Issue

The accuracy of the AMS size prediction was evaluated by comparing the sizes of items determined by the AMS to the sizes of items recorded on the first issue inventory form for each individual. This assumes that in the process of issuing and trying on items the recruits end up with the best fitting size for each item, and that they correctly record that size on the inventory form. Utility shirts are not tried on and are not included in the analysis. There was a large range between various items of from 86% accurate for the utility jacket to 41% accurate for the light blue long sleeve shirt (Table 6). Detailed comparisons of the AMS sizes and measurement values with the issued sizes for each item are presented in Appendix C.

Table 6. AMS Predicted Size Compared to Issued Size (I1)

<u>Clothing Item</u>	<u>N</u>	<u>Same</u>	<u>Different</u>	<u>No Fit</u>
Utility Jacket	140	86%	13%	1%
Windbreaker	142	82%	17%	1%
SS Light Blue Shirt	141	77%	23%	
Utility Trouser	140	77%	23%	
Average		71%	27%	
Garrison Cap	142	64%	36%	
LS Light Blue Shirt	141	41%	48%	11%

In order to have some basis of comparison for the AMS accuracy, size slips and inventories for 157 randomly selected recruits not measured by the AMS were compared. However, the size slips do not directly indicate a predicted size for all clothing items, so only the utility trousers and light blue long & short sleeve shirts were evaluated. The results presented in Table 7 assume that the waist value on the size slip equals the utility trouser waist size and the circled length value equals the utility trouser length size, and that the neck and sleeve values equal the shirt sizes.

Table 7. Size Slip Compared to Issued Size

Clothing Item	N	Same
SS Light Blue Shirt	157	96%
LS Light Blue Shirt	157	92%
Utility Trousers	157	71%

C. Second Issue

Since recruits are not measured for size determination at the second issue, the AMS determined dress clothing item sizes at the time of the first issue, five weeks prior. Those sizes were compared to the second issue inventory forms for those recruits measured at the first issue and still in the same company at the second issue. This assumes that the recruits end up with the best fitting size of an item and correctly record that size on the inventory form during the issuing process. The accuracy of the AMS was less than 35% for all programmed second issue items (Table 8). There is no basis for comparison to the current process. The size slips that were collected did not have sizes recorded for the dress clothing items.

Table 8. AMS Predicted Size Compared to Issued Size (I2)

<u>Clothing Item</u>	<u>N</u>	<u>Same</u>	<u>Different</u>
Dress Trousers	121	34%*	66%*
Hat Frame	107	34%	66%
Trench Coat	117	24%	76%
Dress Coat	121	8%	92%
White Shirt	107	5%	95%

* Adjusted due to difference in programmed size interval (1") and the interval of stocked sizes (2").

D. AMS Operation

This was the first use of the AMS hardware and software in an operational environment for a U.S. military service. The size programming used is unique to Coast Guard items. Both the hardware and software functioned properly most of the time. However, there were several occasions when a measurement station stopped working. This occurred for foot length, weight, sleeve length, and chest circumference at various times. The problems did not occur every time the AMS was used. When they did occur, either resetting the hardware, restarting the software, or both, resolved the problem. This generally resulted in a delay of a few minutes. In some cases when the weight station stopped working I chose to continue using the AMS for the other measurements rather than resetting it. This resulted in the loss of weight data for several subjects, but did not cause any delay in the process. The problem has been reported to Ergotech who is currently working to determine the cause and correct it.

4. Discussion & Recommendations

A. Sample

Although the final male sample obtained did not exactly meet the original sampling goal, it was large enough, and had a sufficient range of body measurement values and clothing sizes issued, to provide a valid analysis. The effort required to obtain the sample was greater than expected due to the limited time available for access to the recruits. The only way to improve the results would be to use the AMS for several entire recruit companies, or other groups of Coast Guard personnel.

The small number of females in each recruit company makes it nearly impossible to obtain a valid sample with out excessive effort. It is estimated that more than ten recruit companies would be required to obtain a good female sample. Without a sufficient range of body measurements and clothing sizes, no analysis of the AMS programming for females is possible.

B. Initial Issue

The accuracy of the AMS for the male initial issue items is not good enough to recommend implementation with the current programming. Some improvements can be made with adjustments to the AMS size programming based on this test. For example, the main problem with the light blue long sleeve shirt is undersizing the neck and sleeve length. However, there is a large amount of overlap in both sizes issued for a given range of body measurements and body measurement values for a given issued size for most items. This would indicate that factors other than body measurements are involved in determining the correct size of an item for an individual. These could include personal preference, differences in subjective fit evaluation, manufacturing differences in the garments, or the correct size not being stocked. The AMS can not be programmed for these factors. I also observed that individuals were occasionally given an item intentionally smaller or larger based on the belief that they would loose or gain weight, or in the case of the garrison cap, that they would have more hair after recruit training. This type of guessing the future correct size can not be programmed into the AMS.

The clothing worn by recruits when they are measured also has some effect on the AMS accuracy. The definitions of chest and waist circumference are based on body features that can not be precisely identified when a shirt is worn. If the clothing is very loose, excess material will be included in measurement values. If it is too tight, the change in body shape may result in incorrect measurement values. Ideally, males should be measured wearing only slightly loose fitting shorts, and females should be measured with only shorts and the bra size and style they would usually wear.

C. Second Issue

The low accuracy of the AMS for the second issue items is not unexpected. The measurements were taken and sizes determined on the first day the recruits arrived for training. The items were fitted five weeks later, and this period of time included specific physical training. It is very likely that many recruits experience changes in body measurements during this time that result in the need for different clothing sizes than originally determined (Newman, 1951, and Bradtmiller, 1999). The only way to properly determine the correct size of dress clothing items is to take measurements and determine sizes at the time the items are fit.

D. Future Testing & Use of the AMS

Before deciding to implement the AMS at the UDC, there should be a separate and independent evaluation of the current issuing process. The main focus of that evaluation should be to determine the current rate of clothing size prediction accuracy as a basis of comparison for the AMS. However, a general evaluation of the current process and recommendations for improvements, with or without the AMS or any other size determination technology, should be included.

The next step in preparing the AMS for operational use in the clothing issue process is to determine what adjustments need to be made to the sizing programming, and then make those changes in the system. Detailed, standard measurement definitions and procedures, as well as detailed, standard fit criteria and procedures, must also be established and documented. Once that is complete, another phase of testing should be done to validate the new programming and standard procedures. It is recommended that males from several entire recruit companies be processed with the AMS for that test.

If the AMS is expected to be used for females, it is recommend that a separate test specifically focused on female clothing items be conducted. This could be done with small groups of females at the UDC, but will require more time than is currently available in the issuing process.

This document reports research undertaken at the U.S. Army Soldier and Biological Chemical Command, Soldier Systems Center, and has been assigned No. NATICK/TR-011615 in a series of reports approved for publication.

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Appendices

Appendix A.

AMS Size Programming: Male USCG Clothing Items

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Utility Trousers: M-01	WAIST_O	679	735		26.7	28.9
	STATURE	1549	1675	28 Short	61.0	65.9
	STATURE	1675	1777	28 Reg	65.9	70.0
	STATURE	1777	1853	28 Long	70.0	73.0
	STATURE	1853	1975	28 XL	73.0	77.8
	WAIST_O	735	786		28.9	30.9
	STATURE	1549	1675	30 Short	61.0	65.9
	STATURE	1675	1777	30 Reg	65.9	70.0
	STATURE	1777	1853	30 Long	70.0	73.0
	STATURE	1853	1975	30 XL	73.0	77.8
	WAIST_O	786	838		30.9	33.0
	STATURE	1549	1675	32 Short	61.0	65.9
	STATURE	1675	1777	32 Reg	65.9	70.0
	STATURE	1777	1853	32 Long	70.0	73.0
	STATURE	1853	1975	32 XL	73.0	77.8
	WAIST_O	838	889		33.0	35.0
	STATURE	1549	1675	34 Short	61.0	65.9
	STATURE	1675	1777	34 Reg	65.9	70.0
	STATURE	1777	1853	34 Long	70.0	73.0
	STATURE	1853	1975	34 XL	73.0	77.8
	WAIST_O	889	940		35.0	37.0
	STATURE	1549	1675	36 Short	61.0	65.9
	STATURE	1675	1777	36 Reg	65.9	70.0
	STATURE	1777	1853	36 Long	70.0	73.0
	STATURE	1853	1975	36 XL	73.0	77.8
	WAIST_O	940	991		37.0	39.0
	STATURE	1549	1675	38 Short	61.0	65.9
	STATURE	1675	1777	38 Reg	65.9	70.0
	STATURE	1777	1853	38 Long	70.0	73.0
	STATURE	1853	1975	38 XL	73.0	77.8
	WAIST_O	991	1041		39.0	41.0
	STATURE	1549	1675	40 Short	61.0	65.9
	STATURE	1675	1777	40 Reg	65.9	70.0
	STATURE	1777	1853	40 Long	70.0	73.0
	STATURE	1853	1975	40 XL	73.0	77.8
	WAIST_O	1041	1092		41.0	43.0
	STATURE	1549	1675	42 Short	61.0	65.9
	STATURE	1675	1777	42 Reg	65.9	70.0
	STATURE	1777	1853	42 Long	70.0	73.0
	STATURE	1853	1975	42 XL	73.0	77.8
	WAIST_O	1092	1143		43.0	45.0
	STATURE	1675	1777	44 Reg	65.9	70.0
	STATURE	1777	1853	44 Long	70.0	73.0
	STATURE	1675	1777	44 Reg	65.9	70.0
	STATURE	1777	1853	44 Long	70.0	73.0
	WAIST_O	1143	1194		45.0	47.0
	STATURE	1675	1777	46 Reg	65.9	70.0
	STATURE	1777	1853	46 Long	70.0	73.0
	STATURE	1675	1777	46 Reg	65.9	70.0
	STATURE	1777	1853	46 Long	70.0	73.0
	WAIST_O	1194	1245		47.0	49.0
	STATURE	1675	1777	48 Reg	65.9	70.0
	STATURE	1777	1853	48 Long	70.0	73.0
	STATURE	1675	1777	48 Reg	65.9	70.0
	STATURE	1777	1853	48 Long	70.0	73.0

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Utility Shirt SS: M-02	NECK	299	349	XS	11.8	13.7
	NECK	349	374	Small	13.7	14.7
	NECK	374	400	Med	14.7	15.7
	NECK	400	425	Large	15.7	16.7
	NECK	425	450	XL	16.7	17.7
	NECK	450	500	2XL	17.7	19.7

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Utility Shirt LS: M-03	NECK	299	349		11.8	13.7
	SLEEVE	749	800	XS 31	29.5	31.5
	SLEEVE	800	825	XS 32	31.5	32.5
	SLEEVE	825	850	XS 33	32.5	33.5
	SLEEVE	850	876	XS 34	33.5	34.5
	SLEEVE	876	901	XS 35	34.5	35.5
	SLEEVE	901	950	XS 36	35.5	37.4
	NECK	349	374		13.7	14.7
	SLEEVE	749	800	Small 31	29.5	31.5
	SLEEVE	800	825	Small 32	31.5	32.5
	SLEEVE	825	850	Small 33	32.5	33.5
	SLEEVE	850	876	Small 34	33.5	34.5
	SLEEVE	876	901	Small 35	34.5	35.5
	SLEEVE	901	950	Small 36	35.5	37.4
	NECK	374	400		14.7	15.7
	SLEEVE	749	800	Med 31	29.5	31.5
	SLEEVE	800	825	Med 32	31.5	32.5
	SLEEVE	825	850	Med 33	32.5	33.5
	SLEEVE	850	876	Med 34	33.5	34.5
	SLEEVE	876	901	Med 35	34.5	35.5
	SLEEVE	901	950	Med 36	35.5	37.4
	NECK	400	425		15.7	16.7
	SLEEVE	749	800	Large 31	29.5	31.5
	SLEEVE	800	825	Large 32	31.5	32.5
	SLEEVE	825	850	Large 33	32.5	33.5
	SLEEVE	850	876	Large 34	33.5	34.5
	SLEEVE	876	901	Large 35	34.5	35.5
	SLEEVE	901	950	Large 36	35.5	37.4
	NECK	425	450		16.7	17.7
	SLEEVE	749	800	XL 31	29.5	31.5
	SLEEVE	800	825	XL 32	31.5	32.5
	SLEEVE	825	850	XL 33	32.5	33.5
	SLEEVE	850	876	XL 34	33.5	34.5
	SLEEVE	876	901	XL 35	34.5	35.5
	SLEEVE	901	950	XL 36	35.5	37.4
	NECK	450	476		17.7	18.7
	SLEEVE	749	800	2XL 31	29.5	31.5
	SLEEVE	800	825	2XL 32	31.5	32.5
	SLEEVE	825	850	2XL 33	32.5	33.5
	SLEEVE	850	876	2XL 34	33.5	34.5
	SLEEVE	876	901	2XL 35	34.5	35.5
	SLEEVE	901	950	2XL 36	35.5	37.4
	NECK	476	505		18.7	19.9
	SLEEVE	749	800	3XL 31	29.5	31.5
	SLEEVE	800	825	3XL 32	31.5	32.5
	SLEEVE	825	850	3XL 33	32.5	33.5
	SLEEVE	850	876	3XL 34	33.5	34.5
	SLEEVE	876	901	3XL 35	34.5	35.5
	SLEEVE	901	950	3XL 36	35.5	37.4

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Pants: M-04	WAIST_O	649	686		25.6	27.0
	STATURE	1549	1675	27 S	61.0	65.9
	STATURE	1675	1777	27 R	65.9	70.0
	STATURE	1777	1853	27 L	70.0	73.0
	STATURE	1853	1975	27 XL	73.0	77.8
	WAIST_O	686	711		27.0	28.0
	STATURE	1549	1675	28 S	61.0	65.9
	STATURE	1675	1777	28 R	65.9	70.0
	STATURE	1777	1853	28 L	70.0	73.0
	STATURE	1853	1975	28 XL	73.0	77.8
	WAIST_O	711	737		28.0	29.0
	STATURE	1549	1675	29 S	61.0	65.9
	STATURE	1675	1777	29 R	65.9	70.0
	STATURE	1777	1853	29 L	70.0	73.0
	STATURE	1853	1975	29 XL	73.0	77.8
	WAIST_O	737	762		29.0	30.0
	STATURE	1549	1675	30 S	61.0	65.9
	STATURE	1675	1777	30 R	65.9	70.0
	STATURE	1777	1853	30 L	70.0	73.0
	STATURE	1853	1975	30 XL	73.0	77.8
	WAIST_O	762	787		30.0	31.0
	STATURE	1549	1675	31 S	61.0	65.9
	STATURE	1675	1777	31 R	65.9	70.0
	STATURE	1777	1853	31 L	70.0	73.0
	STATURE	1853	1975	31 XL	73.0	77.8
	WAIST_O	787	813		31.0	32.0
	STATURE	1549	1675	32 S	61.0	65.9
	STATURE	1675	1777	32 R	65.9	70.0
	STATURE	1777	1853	32 L	70.0	73.0
	STATURE	1853	1975	32 XL	73.0	77.8
	WAIST_O	813	838		32.0	33.0
	STATURE	1549	1675	33 S	61.0	65.9
	STATURE	1675	1777	33 R	65.9	70.0
	STATURE	1777	1853	33 L	70.0	73.0
	STATURE	1853	1975	33 XL	73.0	77.8
	WAIST_O	838	864		33.0	34.0
	STATURE	1549	1675	34 S	61.0	65.9
	STATURE	1675	1777	34 R	65.9	70.0
	STATURE	1777	1853	34 L	70.0	73.0
	STATURE	1853	1975	34 XL	73.0	77.8
	WAIST_O	864	889		34.0	35.0
	STATURE	1549	1675	35 S	61.0	65.9
	STATURE	1675	1777	35 R	65.9	70.0
	STATURE	1777	1853	35 L	70.0	73.0
	STATURE	1853	1975	35 XL	73.0	77.8
	WAIST_O	889	914		35.0	36.0
	STATURE	1549	1675	36 S	61.0	65.9
	STATURE	1675	1777	36 R	65.9	70.0
	STATURE	1777	1853	36 L	70.0	73.0
	STATURE	1853	1975	36 XL	73.0	77.8
	WAIST_O	914	940		36.0	37.0
	STATURE	1549	1675	37 S	61.0	65.9
	STATURE	1675	1777	37 R	65.9	70.0
	STATURE	1777	1853	37 L	70.0	73.0
	STATURE	1853	1975	37 XL	73.0	77.8

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Pants: M-04	WAIST_O	940	965		37.0	38.0
	STATURE	1549	1675	38 S	61.0	65.9
	STATURE	1675	1777	38 R	65.9	70.0
	STATURE	1777	1853	38 L	70.0	73.0
	STATURE	1853	1975	38 XL	73.0	77.8
	WAIST_O	965	991		38.0	39.0
	STATURE	1549	1675	39 S	61.0	65.9
	STATURE	1675	1777	39 R	65.9	70.0
	STATURE	1777	1853	39 L	70.0	73.0
	STATURE	1853	1975	39 XL	73.0	77.8
	WAIST_O	991	1016		39.0	40.0
	STATURE	1549	1675	40 S	61.0	65.9
	STATURE	1675	1777	40 R	65.9	70.0
	STATURE	1777	1853	40 L	70.0	73.0
	STATURE	1853	1975	40 XL	73.0	77.8
	WAIST_O	1016	1041		40.0	41.0
	STATURE	1549	1675	41 S	61.0	65.9
	STATURE	1675	1777	41 R	65.9	70.0
	STATURE	1777	1853	41 L	70.0	73.0
	STATURE	1853	1975	41 XL	73.0	77.8
	WAIST_O	1041	1067		41.0	42.0
	STATURE	1549	1675	42 S	61.0	65.9
	STATURE	1675	1777	42 R	65.9	70.0
	STATURE	1777	1853	42 L	70.0	73.0
	STATURE	1853	1975	42 XL	73.0	77.8
	WAIST_O	1067	1118		42.0	44.0
	STATURE	1675	1777	44 R	65.9	70.0
	STATURE	1675	1777	44 R	65.9	70.0
	STATURE	1777	1853	44 L	70.0	73.0
	STATURE	1777	1853	44 L	70.0	73.0
	WAIST_O	1118	1168		44.0	46.0
	STATURE	1675	1777	46 R	65.9	70.0
	STATURE	1675	1777	46 R	65.9	70.0
	STATURE	1777	1853	46 L	70.0	73.0
	STATURE	1777	1853	46 L	70.0	73.0
	WAIST_O	1168	1219		46.0	48.0
	STATURE	1675	1777	48 R	65.9	70.0
	STATURE	1675	1777	48 R	65.9	70.0
	STATURE	1777	1853	48 L	70.0	73.0
	STATURE	1777	1853	48 L	70.0	73.0
	WAIST_O	1219	1270		48.0	50.0
	STATURE	1675	1777	50 R	65.9	70.0
	STATURE	1675	1777	50 R	65.9	70.0
	STATURE	1777	1853	50 L	70.0	73.0
	STATURE	1777	1853	50 L	70.0	73.0
	WAIST_O	1270	1321		50.0	52.0
	STATURE	1675	1777	52 R	65.9	70.0
	STATURE	1675	1777	52 R	65.9	70.0
	STATURE	1777	1853	52 L	70.0	73.0
	STATURE	1777	1853	52 L	70.0	73.0
	WAIST_O	1321	1385		52.0	54.5
	STATURE	1675	1777	54 R	65.9	70.0
	STATURE	1675	1777	54 R	65.9	70.0
	STATURE	1777	1853	54 L	70.0	73.0
	STATURE	1777	1853	54 L	70.0	73.0

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Shirt LS: M-05	NECK	329	330		13.0	13.0
	SLEEVE	699	749	13 x 29	27.5	29.5
	SLEEVE	749	774	13 x 30	29.5	30.5
	SLEEVE	774	800	13 x 31	30.5	31.5
	SLEEVE	800	825	13 x 32	31.5	32.5
	SLEEVE	825	850	13 x 33	32.5	33.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	NECK	330	343		13.0	13.5
	SLEEVE	699	749	13 1/2 x 29	27.5	29.5
	SLEEVE	749	774	13 1/2 x 30	29.5	30.5
	SLEEVE	774	800	13 1/2 x 31	30.5	31.5
	SLEEVE	800	825	13 1/2 x 32	31.5	32.5
	SLEEVE	825	850	13 1/2 x 33	32.5	33.5
	SLEEVE	850	876	13 1/2 x 34	33.5	34.5
	SLEEVE	876	901	13 1/2 x 35	34.5	35.5
	SLEEVE	901	927	13 1/2 x 36	35.5	36.5
	SLEEVE	927	952	13 1/2 x 37	36.5	37.5
	SLEEVE	952	977	13 1/2 x 38	37.5	38.5
	NECK	343	356		13.5	14.0
	SLEEVE	699	749	14 x 29	27.5	29.5
	SLEEVE	749	774	14 x 30	29.5	30.5
	SLEEVE	774	800	14 x 31	30.5	31.5
	SLEEVE	800	825	14 x 32	31.5	32.5
	SLEEVE	825	850	14 x 33	32.5	33.5
	SLEEVE	850	876	14 x 34	33.5	34.5
	SLEEVE	876	901	14 x 35	34.5	35.5
	SLEEVE	901	927	14 x 36	35.5	36.5
	SLEEVE	927	952	14 x 37	36.5	37.5
	SLEEVE	952	977	14 x 38	37.5	38.5
	NECK	356	368		14.0	14.5
	SLEEVE	699	749	14 1/2 x 29	27.5	29.5
	SLEEVE	749	774	14 1/2 x 30	29.5	30.5
	SLEEVE	774	800	14 1/2 x 31	30.5	31.5
	SLEEVE	800	825	14 1/2 x 32	31.5	32.5
	SLEEVE	825	850	14 1/2 x 33	32.5	33.5
	SLEEVE	850	876	14 1/2 x 34	33.5	34.5
	SLEEVE	876	901	14 1/2 x 35	34.5	35.5
	SLEEVE	901	927	14 1/2 x 36	35.5	36.5
	SLEEVE	927	952	14 1/2 x 37	36.5	37.5
	SLEEVE	952	977	14 1/2 x 38	37.5	38.5
	NECK	368	381		14.5	15.0
	SLEEVE	699	749	15 x 29	27.5	29.5
	SLEEVE	749	774	15 x 30	29.5	30.5
	SLEEVE	774	800	15 x 31	30.5	31.5
	SLEEVE	800	825	15 x 32	31.5	32.5
	SLEEVE	825	850	15 x 33	32.5	33.5
	SLEEVE	850	876	15 x 34	33.5	34.5
	SLEEVE	876	901	15 x 35	34.5	35.5
	SLEEVE	901	927	15 x 36	35.5	36.5
	SLEEVE	927	952	15 x 37	36.5	37.5
	SLEEVE	952	977	15 x 38	37.5	38.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Shirt LS: M-05	NECK	381	394		15.0	15.5
	SLEEVE	699	749	15 1/2 x 29	27.5	29.5
	SLEEVE	749	774	15 1/2 x 30	29.5	30.5
	SLEEVE	774	800	15 1/2 x 31	30.5	31.5
	SLEEVE	800	825	15 1/2 x 32	31.5	32.5
	SLEEVE	825	850	15 1/2 x 33	32.5	33.5
	SLEEVE	850	876	15 1/2 x 34	33.5	34.5
	SLEEVE	876	901	15 1/2 x 35	34.5	35.5
	SLEEVE	901	927	15 1/2 x 36	35.5	36.5
	SLEEVE	927	952	15 1/2 x 37	36.5	37.5
	SLEEVE	952	977	15 1/2 x 38	37.5	38.5
	NECK	394	406		15.5	16.0
	SLEEVE	699	749	16 x 29	27.5	29.5
	SLEEVE	749	774	16 x 30	29.5	30.5
	SLEEVE	774	800	16 x 31	30.5	31.5
	SLEEVE	800	825	16 x 32	31.5	32.5
	SLEEVE	825	850	16 x 33	32.5	33.5
	SLEEVE	850	876	16 x 34	33.5	34.5
	SLEEVE	876	901	16 x 35	34.5	35.5
	SLEEVE	901	927	16 x 36	35.5	36.5
	SLEEVE	927	952	16 x 37	36.5	37.5
	SLEEVE	952	977	16 x 38	37.5	38.5
	NECK	406	419		16.0	16.5
	SLEEVE	749	774	16 1/2 x 30	29.5	30.5
	SLEEVE	774	800	16 1/2 x 31	30.5	31.5
	SLEEVE	800	825	16 1/2 x 32	31.5	32.5
	SLEEVE	825	850	16 1/2 x 33	32.5	33.5
	SLEEVE	850	876	16 1/2 x 34	33.5	34.5
	SLEEVE	876	901	16 1/2 x 35	34.5	35.5
	SLEEVE	901	927	16 1/2 x 36	35.5	36.5
	SLEEVE	927	952	16 1/2 x 37	36.5	37.5
	SLEEVE	952	977	16 1/2 x 38	37.5	38.5
	SLEEVE	952	977	16 1/2 x 38	37.5	38.5
	NECK	419	432		16.5	17.0
	SLEEVE	800	825	17 x 32	31.5	32.5
	SLEEVE	825	850	17 x 33	32.5	33.5
	SLEEVE	850	876	17 x 34	33.5	34.5
	SLEEVE	876	901	17 x 35	34.5	35.5
	SLEEVE	901	927	17 x 36	35.5	36.5
	SLEEVE	927	952	17 x 37	36.5	37.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	NECK	432	445		17.0	17.5
	SLEEVE	800	825	17 1/2 x 32	31.5	32.5
	SLEEVE	825	850	17 1/2 x 33	32.5	33.5
	SLEEVE	850	876	17 1/2 x 34	33.5	34.5
	SLEEVE	876	901	17 1/2 x 35	34.5	35.5
	SLEEVE	901	927	17 1/2 x 36	35.5	36.5
	SLEEVE	927	952	17 1/2 x 37	36.5	37.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Shirt LS: M-05	NECK	445	457		17.5	18.0
	SLEEVE	825	850	18 x 33	32.5	33.5
	SLEEVE	850	876	18 x 34	33.5	34.5
	SLEEVE	876	901	18 x 35	34.5	35.5
	SLEEVE	901	927	18 x 36	35.5	36.5
	SLEEVE	927	952	18 x 37	36.5	37.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	NECK	457	483		18.0	19.0
	SLEEVE	825	850	19 x 33	32.5	33.5
	SLEEVE	850	876	19 x 34	33.5	34.5
	SLEEVE	876	901	19 x 35	34.5	35.5
	SLEEVE	901	927	19 x 36	35.5	36.5
	SLEEVE	927	952	19 x 37	36.5	37.5
	SLEEVE	952	977	19 x 38	37.5	38.5
	SLEEVE	952	977	19 x 38	37.5	38.5
	SLEEVE	952	977	19 x 38	37.5	38.5
	SLEEVE	952	977	19 x 38	37.5	38.5
	SLEEVE	952	977	19 x 38	37.5	38.5
	NECK	483	520		19.0	20.5
	SLEEVE	850	876	20 x 34	33.5	34.5
	SLEEVE	876	901	20 x 35	34.5	35.5
	SLEEVE	901	927	20 x 36	35.5	36.5
	SLEEVE	927	952	20 x 37	36.5	37.5
	SLEEVE	952	977	20 x 38	37.5	38.5
	SLEEVE	952	977	20 x 38	37.5	38.5
	SLEEVE	952	977	20 x 38	37.5	38.5
	SLEEVE	952	977	20 x 38	37.5	38.5
	SLEEVE	952	977	20 x 38	37.5	38.5
	SLEEVE	952	977	20 x 38	37.5	38.5
	SLEEVE	952	977	20 x 38	37.5	38.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
White Dress Shirt: M-06	NECK	279	305		11.0	12.0
	SLEEVE	685	724	12 x 28	27.0	28.5
	SLEEVE	724	749	12 x 29	28.5	29.5
	SLEEVE	749	774	12 x 30	29.5	30.5
	SLEEVE	774	800	12 x 31	30.5	31.5
	SLEEVE	800	825	12 x 32	31.5	32.5
	SLEEVE	825	850	12 x 33	32.5	33.5
	SLEEVE	825	850	12 x 33	32.5	33.5
	SLEEVE	825	850	12 x 33	32.5	33.5
	SLEEVE	825	850	12 x 33	32.5	33.5
	SLEEVE	825	850	12 x 33	32.5	33.5
	SLEEVE	825	850	12 x 33	32.5	33.5
	NECK	305	318		12.0	12.5
	SLEEVE	685	724	12 1/2 x 28	27.0	28.5
	SLEEVE	724	749	12 1/2 x 29	28.5	29.5
	SLEEVE	749	774	12 1/2 x 30	29.5	30.5
	SLEEVE	774	800	12 1/2 x 31	30.5	31.5
	SLEEVE	800	825	12 1/2 x 32	31.5	32.5
	SLEEVE	825	850	12 1/2 x 33	32.5	33.5
	SLEEVE	825	850	12 1/2 x 33	32.5	33.5
	SLEEVE	825	850	12 1/2 x 33	32.5	33.5
	SLEEVE	825	850	12 1/2 x 33	32.5	33.5
	SLEEVE	825	850	12 1/2 x 33	32.5	33.5
	SLEEVE	825	850	12 1/2 x 33	32.5	33.5
	NECK	318	330		12.5	13.0
	SLEEVE	685	724	13 x 28	27.0	28.5
	SLEEVE	724	749	13 x 29	28.5	29.5
	SLEEVE	749	774	13 x 30	29.5	30.5
	SLEEVE	774	800	13 x 31	30.5	31.5
	SLEEVE	800	825	13 x 32	31.5	32.5
	SLEEVE	825	850	13 x 33	32.5	33.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	SLEEVE	850	876	13 x 34	33.5	34.5
	NECK	330	343		13.0	13.5
	SLEEVE	685	724	13 1/2 x 28	27.0	28.5
	SLEEVE	724	749	13 1/2 x 29	28.5	29.5
	SLEEVE	749	774	13 1/2 x 30	29.5	30.5
	SLEEVE	774	800	13 1/2 x 31	30.5	31.5
	SLEEVE	800	825	13 1/2 x 32	31.5	32.5
	SLEEVE	825	850	13 1/2 x 33	32.5	33.5
	SLEEVE	850	876	13 1/2 x 34	33.5	34.5
	SLEEVE	876	901	13 1/2 x 35	34.5	35.5
	SLEEVE	901	927	13 1/2 x 36	35.5	36.5
	SLEEVE	927	952	13 1/2 x 37	36.5	37.5
	SLEEVE	927	952	13 1/2 x 37	36.5	37.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
White Dress Shirt: M-06	NECK	343	356		13.5	14.0
	SLEEVE	685	724	14 x 28	27.0	28.5
	SLEEVE	724	749	14 x 29	28.5	29.5
	SLEEVE	749	774	14 x 30	29.5	30.5
	SLEEVE	774	800	14 x 31	30.5	31.5
	SLEEVE	800	825	14 x 32	31.5	32.5
	SLEEVE	825	850	14 x 33	32.5	33.5
	SLEEVE	850	876	14 x 34	33.5	34.5
	SLEEVE	876	901	14 x 35	34.5	35.5
	SLEEVE	901	927	14 x 36	35.5	36.5
	SLEEVE	927	952	14 x 37	36.5	37.5
	SLEEVE	952	977	14 x 38	37.5	38.5
	NECK	356	368		14.0	14.5
	SLEEVE	699	749	14 1/2 x 29	27.5	29.5
	SLEEVE	749	774	14 1/2 x 30	29.5	30.5
	SLEEVE	774	800	14 1/2 x 31	30.5	31.5
	SLEEVE	800	825	14 1/2 x 32	31.5	32.5
	SLEEVE	825	850	14 1/2 x 33	32.5	33.5
	SLEEVE	850	876	14 1/2 x 34	33.5	34.5
	SLEEVE	876	901	14 1/2 x 35	34.5	35.5
	SLEEVE	901	927	14 1/2 x 36	35.5	36.5
	SLEEVE	927	952	14 1/2 x 37	36.5	37.5
	SLEEVE	952	977	14 1/2 x 38	37.5	38.5
	SLEEVE	952	977	14 1/2 x 38	37.5	38.5
	NECK	368	381		14.5	15.0
	SLEEVE	699	749	15 x 29	27.5	29.5
	SLEEVE	749	774	15 x 30	29.5	30.5
	SLEEVE	774	800	15 x 31	30.5	31.5
	SLEEVE	800	825	15 x 32	31.5	32.5
	SLEEVE	825	850	15 x 33	32.5	33.5
	SLEEVE	850	876	15 x 34	33.5	34.5
	SLEEVE	876	901	15 x 35	34.5	35.5
	SLEEVE	901	927	15 x 36	35.5	36.5
	SLEEVE	927	952	15 x 37	36.5	37.5
	SLEEVE	952	977	15 x 38	37.5	38.5
	SLEEVE	952	977	15 x 38	37.5	38.5
	NECK	381	394		15.0	15.5
	SLEEVE	699	749	15 1/2 x 29	27.5	29.5
	SLEEVE	749	774	15 1/2 x 30	29.5	30.5
	SLEEVE	774	800	15 1/2 x 31	30.5	31.5
	SLEEVE	800	825	15 1/2 x 32	31.5	32.5
	SLEEVE	825	850	15 1/2 x 33	32.5	33.5
	SLEEVE	850	876	15 1/2 x 34	33.5	34.5
	SLEEVE	876	901	15 1/2 x 35	34.5	35.5
	SLEEVE	901	927	15 1/2 x 36	35.5	36.5
	SLEEVE	927	952	15 1/2 x 37	36.5	37.5
	SLEEVE	952	977	15 1/2 x 38	37.5	38.5
	SLEEVE	952	977	15 1/2 x 38	37.5	38.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
White Dress Shirt: M-06	NECK	394	406		15.5	16.0
	SLEEVE	699	749	16 x 29	27.5	29.5
	SLEEVE	749	774	16 x 30	29.5	30.5
	SLEEVE	774	800	16 x 31	30.5	31.5
	SLEEVE	800	825	16 x 32	31.5	32.5
	SLEEVE	825	850	16 x 33	32.5	33.5
	SLEEVE	850	876	16 x 34	33.5	34.5
	SLEEVE	876	901	16 x 35	34.5	35.5
	SLEEVE	901	927	16 x 36	35.5	36.5
	SLEEVE	927	952	16 x 37	36.5	37.5
	SLEEVE	952	977	16 x 38	37.5	38.5
	SLEEVE	952	977	16 x 38	37.5	38.5
	NECK	406	419		16.0	16.5
	SLEEVE	749	774	16 1/2 x 30	29.5	30.5
	SLEEVE	774	800	16 1/2 x 31	30.5	31.5
	SLEEVE	800	825	16 1/2 x 32	31.5	32.5
	SLEEVE	825	850	16 1/2 x 33	32.5	33.5
	SLEEVE	850	876	16 1/2 x 34	33.5	34.5
	SLEEVE	876	901	16 1/2 x 35	34.5	35.5
	SLEEVE	901	927	16 1/2 x 36	35.5	36.5
	SLEEVE	927	952	16 1/2 x 37	36.5	37.5
	SLEEVE	952	977	16 1/2 x 38	37.5	38.5
	SLEEVE	952	977	16 1/2 x 38	37.5	38.5
	SLEEVE	952	977	16 1/2 x 38	37.5	38.5
	NECK	419	432		16.5	17.0
	SLEEVE	800	825	17 x 32	31.5	32.5
	SLEEVE	825	850	17 x 33	32.5	33.5
	SLEEVE	850	876	17 x 34	33.5	34.5
	SLEEVE	876	901	17 x 35	34.5	35.5
	SLEEVE	901	927	17 x 36	35.5	36.5
	SLEEVE	927	952	17 x 37	36.5	37.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	SLEEVE	952	977	17 x 38	37.5	38.5
	NECK	432	445		17.0	17.5
	SLEEVE	800	825	17 1/2 x 32	31.5	32.5
	SLEEVE	825	850	17 1/2 x 33	32.5	33.5
	SLEEVE	850	876	17 1/2 x 34	33.5	34.5
	SLEEVE	876	901	17 1/2 x 35	34.5	35.5
	SLEEVE	901	927	17 1/2 x 36	35.5	36.5
	SLEEVE	927	952	17 1/2 x 37	36.5	37.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5
	SLEEVE	952	977	17 1/2 x 38	37.5	38.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
White Dress Shirt: M-06	NECK	445	457		17.5	18.0
	SLEEVE	800	825	18 x 32	31.5	32.5
	SLEEVE	825	850	18 x 33	32.5	33.5
	SLEEVE	850	876	18 x 34	33.5	34.5
	SLEEVE	876	901	18 x 35	34.5	35.5
	SLEEVE	901	927	18 x 36	35.5	36.5
	SLEEVE	927	952	18 x 37	36.5	37.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	SLEEVE	952	977	18 x 38	37.5	38.5
	NECK	457	483		18.0	19.0
	SLEEVE	800	825	18 1/2 x 32	31.5	32.5
	SLEEVE	825	850	18 1/2 x 33	32.5	33.5
	SLEEVE	850	876	18 1/2 x 34	33.5	34.5
	SLEEVE	876	901	18 1/2 x 35	34.5	35.5
	SLEEVE	901	927	18 1/2 x 36	35.5	36.5
	SLEEVE	927	952	18 1/2 x 37	36.5	37.5
	SLEEVE	952	977	18 1/2 x 38	37.5	38.5
	SLEEVE	952	977	18 1/2 x 38	37.5	38.5
	SLEEVE	952	977	18 1/2 x 38	37.5	38.5
	SLEEVE	952	977	18 1/2 x 38	37.5	38.5
	SLEEVE	952	977	18 1/2 x 38	37.5	38.5
	SLEEVE	952	977	18 1/2 x 38	37.5	38.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Coat: M-07	CHEST	829	864		32.6	34.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	686	34 S Ath	25.0	27.0
	WAIST_O	686	1400	34 S Reg	27.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	686	34 R Ath	25.0	27.0
	WAIST_O	686	1400	34 R Reg	27.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	686	34 L Ath	25.0	27.0
	WAIST_O	686	1400	34 L Reg	27.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	686	34 XL Ath	25.0	27.0
	WAIST_O	686	1400	34 XL Reg	27.0	55.1
	CHEST	864	889		34.0	35.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	711	35 S Ath	25.0	28.0
	WAIST_O	711	1400	35 S Reg	28.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	711	35 R Ath	25.0	28.0
	WAIST_O	711	1400	35 R Reg	28.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	711	35 L Ath	25.0	28.0
	WAIST_O	711	1400	35 L Reg	28.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	711	35 XL Ath	25.0	28.0
	WAIST_O	711	1400	35 XL Reg	28.0	55.1
	CHEST	889	914		35.0	36.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	737	36 S Ath	25.0	29.0
	WAIST_O	737	1400	36 S Reg	29.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	737	36 R Ath	25.0	29.0
	WAIST_O	737	1400	36 R Reg	29.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	737	36 L Ath	25.0	29.0
	WAIST_O	737	1400	36 L Reg	29.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	737	36 XL Ath	25.0	29.0
	WAIST_O	737	1400	36 XL Reg	29.0	55.1
	CHEST	914	940		36.0	37.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	762	37 S Ath	25.0	30.0
	WAIST_O	762	1400	37 S Reg	30.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	762	37 R Ath	25.0	30.0
	WAIST_O	762	1400	37 R Reg	30.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	762	37 L Ath	25.0	30.0
	WAIST_O	762	1400	37 L Reg	30.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	762	37 XL Ath	25.0	30.0
	WAIST_O	762	1400	37 XL Reg	30.0	55.1

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Coat: M-07	CHEST	940	965		37.0	38.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	787	38 S Ath	25.0	31.0
	WAIST_O	787	1400	38 S Reg	31.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	787	38 R Ath	25.0	31.0
	WAIST_O	787	1400	38 R Reg	31.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	787	38 L Ath	25.0	31.0
	WAIST_O	787	1400	38 L Reg	31.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	787	38 XL Ath	25.0	31.0
	WAIST_O	787	1400	38 XL Reg	31.0	55.1
	CHEST	965	991		38.0	39.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	813	39 S Ath	25.0	32.0
	WAIST_O	813	1400	39 S Reg	32.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	813	39 R Ath	25.0	32.0
	WAIST_O	813	1400	39 R Reg	32.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	813	39 L Ath	25.0	32.0
	WAIST_O	813	1400	39 L Reg	32.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	813	39 XL Ath	25.0	32.0
	WAIST_O	813	1400	39 XL Reg	32.0	55.1
	CHEST	991	1016		39.0	40.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	838	40 S Ath	25.0	33.0
	WAIST_O	838	1400	40 S Reg	33.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	838	40 R Ath	25.0	33.0
	WAIST_O	838	1400	40 R Reg	33.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	838	40 L Ath	25.0	33.0
	WAIST_O	838	1400	40 L Reg	33.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	838	40 XL Ath	25.0	33.0
	WAIST_O	838	1400	40 XL Reg	33.0	55.1
	CHEST	1016	1041		40.0	41.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	864	41 S Ath	25.0	34.0
	WAIST_O	864	1400	41 S Reg	34.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	864	41 R Ath	25.0	34.0
	WAIST_O	864	1400	41 R Reg	34.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	864	41 L Ath	25.0	34.0
	WAIST_O	864	1400	41 L Reg	34.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	864	41 XL Ath	25.0	34.0
	WAIST_O	864	1400	41 XL Reg	34.0	55.1

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Coat: M-07	CHEST	1041	1067		41.0	42.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	889	42 S Ath	25.0	35.0
	WAIST_O	889	1400	42 S Reg	35.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	889	42 R Ath	25.0	35.0
	WAIST_O	889	1400	42 R Reg	35.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	889	42 L Ath	25.0	35.0
	WAIST_O	889	1400	42 L Reg	35.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	889	42 XL Ath	25.0	35.0
	WAIST_O	889	1400	42 XL Reg	35.0	55.1
	CHEST	1067	1093		42.0	43.0
	STATURE	1550	1675		61.0	65.9
	WAIST_O	634	914	43 S Ath	25.0	36.0
	WAIST_O	915	1400	43 S Reg	36.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	914	43 R Ath	25.0	36.0
	WAIST_O	914	1400	43 R Reg	36.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	914	43 L Ath	25.0	36.0
	WAIST_O	914	1400	43 L Reg	36.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	914	43 XL Ath	25.0	36.0
	WAIST_O	914	1400	43 XL Reg	36.0	55.1
	CHEST	1093	1118		43.0	44.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	940	44 S Ath	25.0	37.0
	WAIST_O	940	1400	44 S Reg	37.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	940	44 R Ath	25.0	37.0
	WAIST_O	940	1400	44 R Reg	37.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	940	44 L Ath	25.0	37.0
	WAIST_O	940	1400	44 L Reg	37.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	940	44 XL Ath	25.0	37.0
	WAIST_O	940	1400	44 XL Reg	37.0	55.1
	CHEST	1118	1143		44.0	45.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	965	45 S Ath	25.0	38.0
	WAIST_O	965	1400	45 S Reg	38.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	965	45 R Ath	25.0	38.0
	WAIST_O	965	1400	45 R Reg	38.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	965	45 L Ath	25.0	38.0
	WAIST_O	965	1400	45 L Reg	38.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	965	45 XL Ath	25.0	38.0
	WAIST_O	965	1400	45 XL Reg	38.0	55.1

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Coat: M-07	CHEST	1143	1168		45.0	46.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	991	46 S Ath	25.0	39.0
	WAIST_O	991	1400	46 S Reg	39.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	991	46 R Ath	25.0	39.0
	WAIST_O	991	1400	46 R Reg	39.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	991	46 L Ath	25.0	39.0
	WAIST_O	991	1400	46 L Reg	39.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	991	46 XL Ath	25.0	39.0
	WAIST_O	991	1400	46 XL Reg	39.0	55.1
	CHEST	1168	1219		46.0	48.0
	STATURE	1549	1675		61.0	65.9
	WAIST_O	634	1041	48 S Ath	25.0	41.0
	WAIST_O	1041	1400	48 S Reg	41.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1041	48 R Ath	25.0	41.0
	WAIST_O	1041	1400	48 R Reg	41.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1041	48 L Ath	25.0	41.0
	WAIST_O	1041	1400	48 L Reg	41.0	55.1
	STATURE	1853	1975		73.0	77.8
	WAIST_O	634	1041	48 XL Ath	25.0	41.0
	WAIST_O	1041	1400	48 XL Reg	41.0	55.1
	CHEST	1219	1270		48.0	50.0
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1092	50 R Ath	25.0	43.0
	WAIST_O	1092	1400	50 R Reg	43.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1092	50 L Ath	25.0	43.0
	WAIST_O	1092	1400	50 L Reg	43.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1092	50 R Ath	25.0	43.0
	WAIST_O	1092	1400	50 R Reg	43.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1092	50 L Ath	25.0	43.0
	WAIST_O	1092	1400	50 L Reg	43.0	55.1
	CHEST	1270	1321		50.0	52.0
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1143	52 R Ath	25.0	45.0
	WAIST_O	1143	1400	52 R Reg	45.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1143	52 L Ath	25.0	45.0
	WAIST_O	1143	1400	52 L Reg	45.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1143	52 R Ath	25.0	45.0
	WAIST_O	1143	1400	52 R Reg	45.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1143	52 L Ath	25.0	45.0
	WAIST_O	1143	1400	52 L Reg	45.0	55.1

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Dress Coat: M-07	CHEST	1321	1372		52.0	54.0
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1194	54 R Ath	25.0	47.0
	WAIST_O	1194	1400	54 R Reg	47.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1194	54 L Ath	25.0	47.0
	WAIST_O	1194	1400	54 L Reg	47.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1194	54 R Ath	25.0	47.0
	WAIST_O	1194	1400	54 R Reg	47.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1194	54 L Ath	25.0	47.0
	WAIST_O	1194	1400	54 L Reg	47.0	55.1
	CHEST	1372	1422		54.0	56.0
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1245	56 R Ath	25.0	49.0
	WAIST_O	1245	1400	56 R Reg	49.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1245	56 L Ath	25.0	49.0
	WAIST_O	1245	1400	56 L Reg	49.0	55.1
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1245	56 R Ath	25.0	49.0
	WAIST_O	1245	1400	56 R Reg	49.0	55.1
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1245	56 L Ath	25.0	49.0
	WAIST_O	1245	1400	56 L Reg	49.0	55.1
	CHEST	1422	1473		56.0	58.0
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1600	58 R Reg	25.0	63.0
	WAIST_O	634	1600	58 R Reg	25.0	63.0
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1600	58 L Reg	25.0	63.0
	WAIST_O	634	1600	58 L Reg	25.0	63.0
	STATURE	1675	1777		65.9	70.0
	WAIST_O	634	1600	58 R Reg	25.0	63.0
	WAIST_O	634	1600	58 R Reg	25.0	63.0
	STATURE	1777	1853		70.0	73.0
	WAIST_O	634	1600	58 L Reg	25.0	63.0
	WAIST_O	634	1600	58 L Reg	25.0	63.0

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Trench Coat: M-08	CHEST	829	889		32.6	35.0
	STATURE	1549	1675	36 S	61.0	65.9
	STATURE	1675	1777	36 R	65.9	70.0
	STATURE	1777	1853	36 L	70.0	73.0
	STATURE	1853	1975	36 XL	73.0	77.8
	CHEST	889	940		35.0	37.0
	STATURE	1549	1675	38 S	61.0	65.9
	STATURE	1675	1777	38 R	65.9	70.0
	STATURE	1777	1853	38 L	70.0	73.0
	STATURE	1853	1975	38 XL	73.0	77.8
	CHEST	940	991		37.0	39.0
	STATURE	1549	1675	40 S	61.0	65.9
	STATURE	1675	1777	40 R	65.9	70.0
	STATURE	1777	1853	40 L	70.0	73.0
	STATURE	1853	1975	40 XL	73.0	77.8
	CHEST	991	1041		39.0	41.0
	STATURE	1549	1675	42 S	61.0	65.9
	STATURE	1675	1777	42 R	65.9	70.0
	STATURE	1777	1853	42 L	70.0	73.0
	STATURE	1853	1975	42 XL	73.0	77.8
	CHEST	1041	1092		41.0	43.0
	STATURE	1549	1675	44 S	61.0	65.9
	STATURE	1675	1777	44 R	65.9	70.0
	STATURE	1777	1853	44 L	70.0	73.0
	STATURE	1853	1975	44 XL	73.0	77.8
	CHEST	1092	1143		43.0	45.0
	STATURE	1549	1675	46 S	61.0	65.9
	STATURE	1675	1777	46 R	65.9	70.0
	STATURE	1777	1853	46 L	70.0	73.0
	STATURE	1853	1975	46 XL	73.0	77.8
	CHEST	1143	1194		45.0	47.0
	STATURE	1549	1675	48 S	61.0	65.9
	STATURE	1675	1777	48 R	65.9	70.0
	STATURE	1777	1853	48 L	70.0	73.0
	STATURE	1853	1975	48 XL	73.0	77.8
	CHEST	1194	1245		47.0	49.0
	STATURE	1675	1777	50 R	65.9	70.0
	STATURE	1777	1853	50 L	70.0	73.0
	STATURE	1675	1777	50 R	65.9	70.0
	STATURE	1777	1853	50 L	70.0	73.0
	CHEST	1245	1295		49.0	51.0
	STATURE	1649	1777	52 R	64.9	70.0
	STATURE	1777	1900	52 L	70.0	74.8
	STATURE	1649	1777	52 R	64.9	70.0
	STATURE	1777	1900	52 L	70.0	74.8
	CHEST	1295	1346		51.0	53.0
	STATURE	1649	1777	54 R	64.9	70.0
	STATURE	1777	1900	54 L	70.0	74.8
	STATURE	1649	1777	54 R	64.9	70.0
	STATURE	1777	1900	54 L	70.0	74.8
	CHEST	1346	1397		53.0	55.0
	STATURE	1649	1777	56 R	64.9	70.0
	STATURE	1777	1900	56 L	70.0	74.8
	STATURE	1649	1777	56 R	64.9	70.0
	STATURE	1777	1900	56 L	70.0	74.8

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Garrison Cap: M-09	HEADCIRC	499	509	6 3/8	19.6	20.0
	HEADCIRC	509	519	6 1/2	20.0	20.4
	HEADCIRC	519	529	6 5/8	20.4	20.8
	HEADCIRC	529	539	6 3/4	20.8	21.2
	HEADCIRC	539	549	6 7/8	21.2	21.6
	HEADCIRC	549	559	7	21.6	22.0
	HEADCIRC	559	569	7 1/8	22.0	22.4
	HEADCIRC	569	579	7 1/4	22.4	22.8
	HEADCIRC	579	589	7 3/8	22.8	23.2
	HEADCIRC	589	599	7 1/2	23.2	23.6
	HEADCIRC	599	609	7 5/8	23.6	24.0
	HEADCIRC	609	619	7 3/4	24.0	24.4
	HEADCIRC	619	629	7 7/8	24.4	24.8
	HEADCIRC	629	640	8	24.8	25.2

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Utility Jacket: M-10	CHEST	759	813		29.9	32.0
	STATURE	1499	1675	XSmall Short	59.0	65.9
	STATURE	1675	1775	XSmall Reg	65.9	69.9
	STATURE	1775	1850	XSmall Long	69.9	72.8
	STATURE	1850	1910	XSmall XL	72.8	75.2
	CHEST	813	914		32.0	36.0
	STATURE	1499	1675	Small Short	59.0	65.9
	STATURE	1675	1775	Small Reg	65.9	69.9
	STATURE	1775	1850	Small Long	69.9	72.8
	STATURE	1850	1910	Small XL	72.8	75.2
	CHEST	914	1016		36.0	40.0
	STATURE	1499	1675	Medium Short	59.0	65.9
	STATURE	1675	1775	Medium Reg	65.9	69.9
	STATURE	1775	1850	Medium Long	69.9	72.8
	STATURE	1850	1910	Medium XL	72.8	75.2
	CHEST	1016	1118		40.0	44.0
	STATURE	1499	1675	Large Short	59.0	65.9
	STATURE	1675	1775	Large Reg	65.9	69.9
	STATURE	1775	1850	Large Long	69.9	72.8
	STATURE	1850	1910	Large XL	72.8	75.2
	CHEST	1118	1219		44.0	48.0
	STATURE	1499	1675	XLarge Short	59.0	65.9
	STATURE	1675	1775	XLarge Reg	65.9	69.9
	STATURE	1775	1850	XLarge Long	69.9	72.8
	STATURE	1850	1910	XLarge XL	72.8	75.2

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Windbreaker: M-11	CHEST	760	850		29.9	33.5
	STATURE	1499	1675	34 Short	59.0	65.9
	STATURE	1675	1775	34 Reg	65.9	69.9
	STATURE	1775	1850	34 Long	69.9	72.8
	STATURE	1850	1910	34 XL	72.8	75.2
	CHEST	850	900		33.5	35.4
	STATURE	1499	1675	36 Short	59.0	65.9
	STATURE	1675	1775	36 Reg	65.9	69.9
	STATURE	1775	1850	36 Long	69.9	72.8
	STATURE	1850	1910	36 XL	72.8	75.2
	CHEST	900	950		35.4	37.4
	STATURE	1499	1675	38 Short	59.0	65.9
	STATURE	1675	1775	38 Reg	65.9	69.9
	STATURE	1775	1850	38 Long	69.9	72.8
	STATURE	1850	1910	38 XL	72.8	75.2
	CHEST	950	1000		37.4	39.4
	STATURE	1499	1675	40 Short	59.0	65.9
	STATURE	1675	1775	40 Reg	65.9	69.9
	STATURE	1775	1850	40 Long	69.9	72.8
	STATURE	1850	1910	40 XL	72.8	75.2
	CHEST	1000	1055		39.4	41.5
	STATURE	1499	1675	42 Short	59.0	65.9
	STATURE	1675	1775	42 Reg	65.9	69.9
	STATURE	1775	1850	42 Long	69.9	72.8
	STATURE	1850	1910	42 XL	72.8	75.2
	CHEST	1055	1105		41.5	43.5
	STATURE	1499	1675	44 Short	59.0	65.9
	STATURE	1675	1775	44 Reg	65.9	69.9
	STATURE	1775	1850	44 Long	69.9	72.8
	STATURE	1850	1910	44 XL	72.8	75.2
	CHEST	1105	1155		43.5	45.5
	STATURE	1499	1675	46 Short	59.0	65.9
	STATURE	1675	1775	46 Reg	65.9	69.9
	STATURE	1775	1850	46 Long	69.9	72.8
	STATURE	1850	1910	46 XL	72.8	75.2
	CHEST	1155	1205		45.5	47.4
	STATURE	1499	1675	48 Short	59.0	65.9
	STATURE	1675	1775	48 Reg	65.9	69.9
	STATURE	1775	1850	48 Long	69.9	72.8
	STATURE	1850	1910	48 XL	72.8	75.2
	CHEST	1205	1260		47.4	49.6
	STATURE	1499	1675	50 Short	59.0	65.9
	STATURE	1675	1775	50 Reg	65.9	69.9
	STATURE	1775	1850	50 Long	69.9	72.8
	STATURE	1850	1910	50 XL	72.8	75.2

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Lt Blue SS Shirt: M-12	NECK	300	330	13	11.8	13.0
	NECK	330	343	13 1/2	13.0	13.5
	NECK	343	356	14	13.5	14.0
	NECK	356	368	14 1/2	14.0	14.5
	NECK	368	381	15	14.5	15.0
	NECK	381	394	15 1/2	15.0	15.5
	NECK	394	406	16	15.5	16.0
	NECK	406	419	16 1/2	16.0	16.5
	NECK	419	432	17	16.5	17.0
	NECK	432	445	17 1/2	17.0	17.5
	NECK	445	457	18	17.5	18.0
	NECK	457	483	18 1/2	18.0	19.0
	NECK	483	520	20	19.0	20.5

Item #	Measurement	mm		Size	inches	
		>	<=		>	<=
Hat Frame: M-13	HEADCIRC	499	509	6 3/8	19.6	20.0
	HEADCIRC	509	519	6 1/2	20.0	20.4
	HEADCIRC	519	529	6 5/8	20.4	20.8
	HEADCIRC	529	539	6 3/4	20.8	21.2
	HEADCIRC	539	549	6 7/8	21.2	21.6
	HEADCIRC	549	559	7	21.6	22.0
	HEADCIRC	559	569	7 1/8	22.0	22.4
	HEADCIRC	569	579	7 1/4	22.4	22.8
	HEADCIRC	579	589	7 3/8	22.8	23.2
	HEADCIRC	589	599	7 1/2	23.2	23.6
	HEADCIRC	599	609	7 5/8	23.6	24.0
	HEADCIRC	609	619	7 3/4	24.0	24.4
	HEADCIRC	619	629	7 7/8	24.4	24.8
	HEADCIRC	629	640	8	24.8	25.2

Appendix B.
Sample Issuing Forms

Name _____

Company Q158

SSN ()

Height 5' 7" Weight 167

Chest 40 Bust 34

Waist 34 Hips 40

Neck 16 1/2 Sleeve 32

Coat _____ Pants/Skirt _____

Shirt _____ Trenchcoat _____

Work Shirt 14 Work Pants 34

(S) (R) (L) (XL) Length 38 1/2

Shoe Size 9 1/2 (N) (R) (W) (XW)

Figure B-1. Size Slip.

Male Recruit 2nd Issue Inventory

Name _____ Company QUEBEC Date 31 OCT 88
Last First MI

Dress Insignia TER Bow Tie RD

White Gloves (S) (M) (L)

RSS1 _____ RSS2 _____ RSS3 _____ RSS4 _____

Hat Frame size: 7 1/8

Dress Trousers 38R (S) (R) (L) (XL)

Dress Coat 43 (S) (R) (L) (XL) (Athletic)

White Shirt 17 x 32

Trench Coat 44 (S) (R) (L) (XL)

Dress Shoes 10 (N) (R) (W) (XW)

Signature: _____

Figure B-3. Second Issue Inventory Form.

Appendix C.
USCG Male Sample Analysis

The following table and figures present the distribution of some basic population descriptive variables for the male sample of the USCG AMS field test. These are compared to a sample of 329 U.S. Marine Corps recruits who participated in a study of 3D laser scanning for automated body measurement and clothing size determination from March, 1998, through June, 1998, at the Marine Corps Recruit Depot, San Diego, CA. It is not expected that that these two groups would be the same, and they are significantly different at the .05 level for stature, chest, neck, and weight. However, there should be some similarities if the AMS sampling was successful. Note that USCG sample total here is for all measured recruits and differs slightly from Table 5, which only includes recruits with both measurement and clothing size data.

Table C-1. Male USCG AMS Sample Compared to USCM 3D Scan Sample

Measurement	N		Min		Max		Mean		Std. Dev.	
	USCG	USMC	USCG	USMC	USCG	USMC	USCG	USMC	USCG	USMC
STATURE (In)	149	329	63.3	62.6	75.4	78.0	69.69	69.05	2.72	2.59
CHEST (In)	147	329	31.7	32.2	43.6	46.9	37.97	38.98	2.67	3.07
NECK (In)	147	329	14.1	13.0	18.2	17.1	16.12	14.90	0.90	0.78
WAIST (In)	147	329	26.8	26.0	40.9	43.1	33.61	33.63	3.06	3.77
WEIGHT (Lbs)	112	329	107.8	105.2	237.6	240.4	166.08	172.65	25.88	26.84

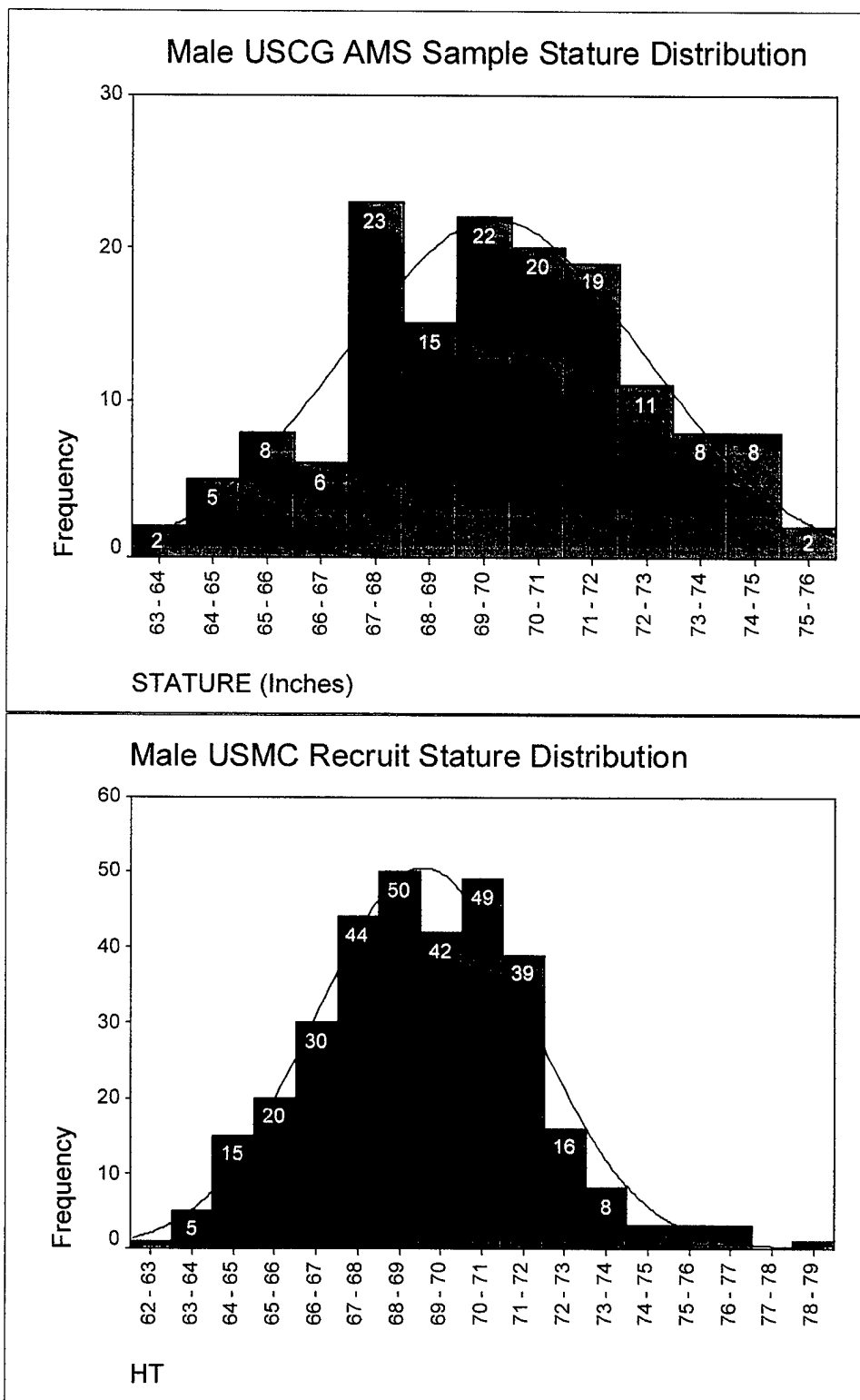


Figure C-1. Stature Comparison.

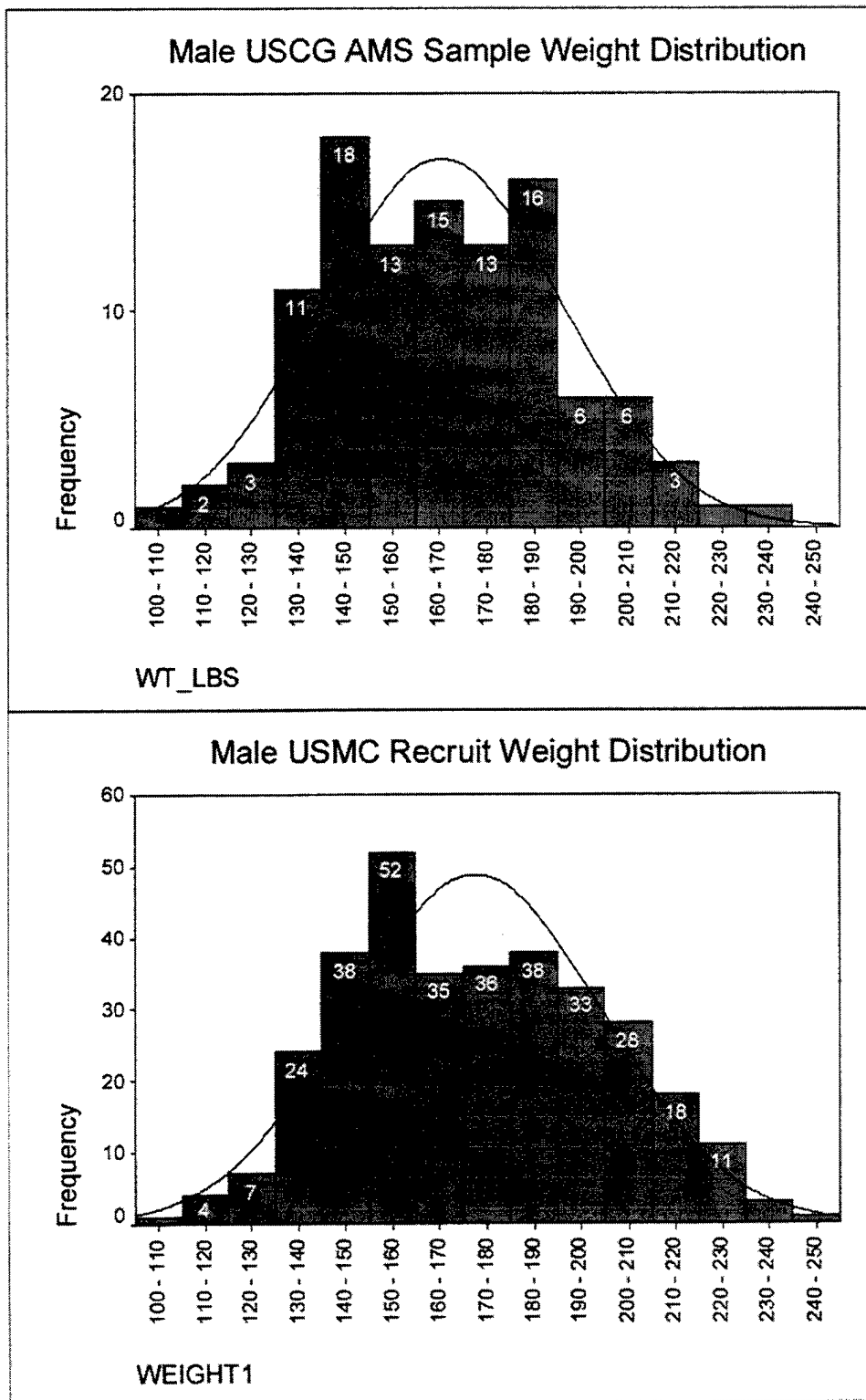


Figure C-2. Weight Comparison.

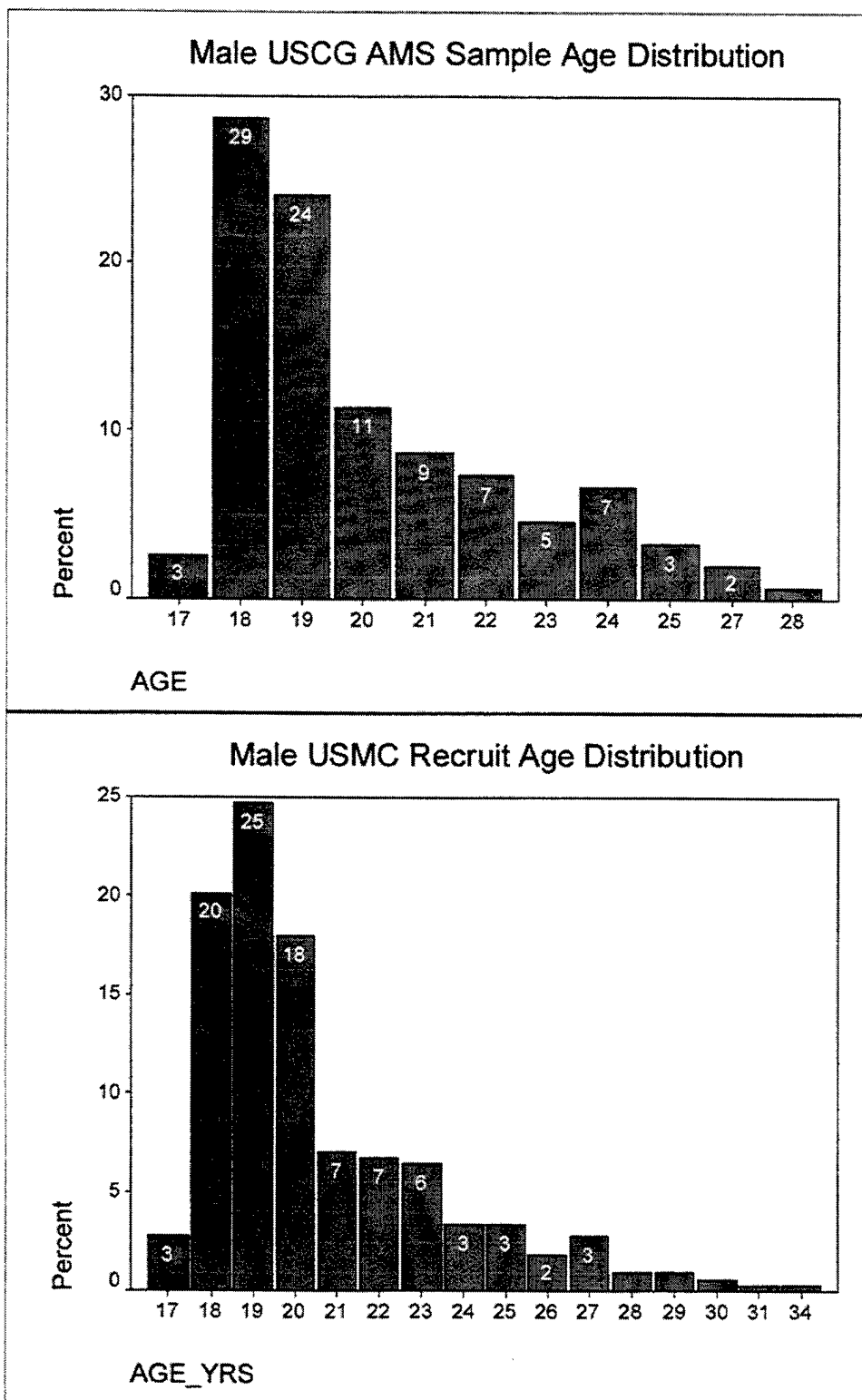


Figure C-3. Age Comparison.

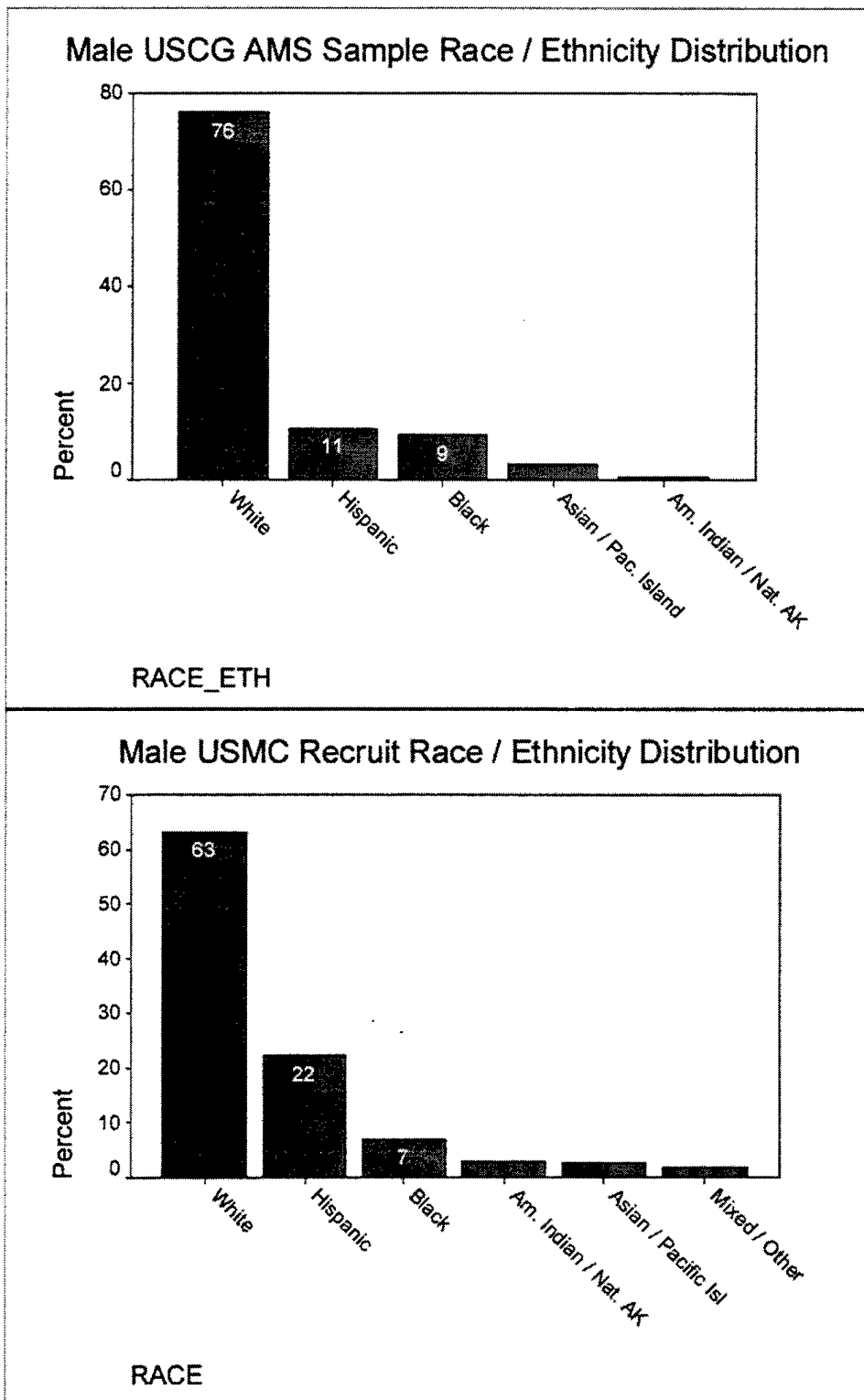


Figure C-4. Race / Ethnicity Comparison.

Appendix D.

First Issue Results by Item

1. Utility Jacket

Table D-1. Utility Jacket Issued Size Compared to AMS Size

Utility Jacket Issued(1) Size	SS	SR	SL	MS	MR	ML	MXL	LS	LR	LL	LXL	XLR	XLXL
AMS Size													
XSmall Long			1										
Small Short	5				1								
Small Reg		11			1								
Small Long			6			2							
Small XL						2	1						
Medium Short				8									
Medium Reg					34				1	1			
Medium Long					1	19				1			
Medium XL						1	8						
Large Short								1					
Large Reg									11			2	
Large Long									1	12	1		1
Large XL											5		
No Fit											1		1

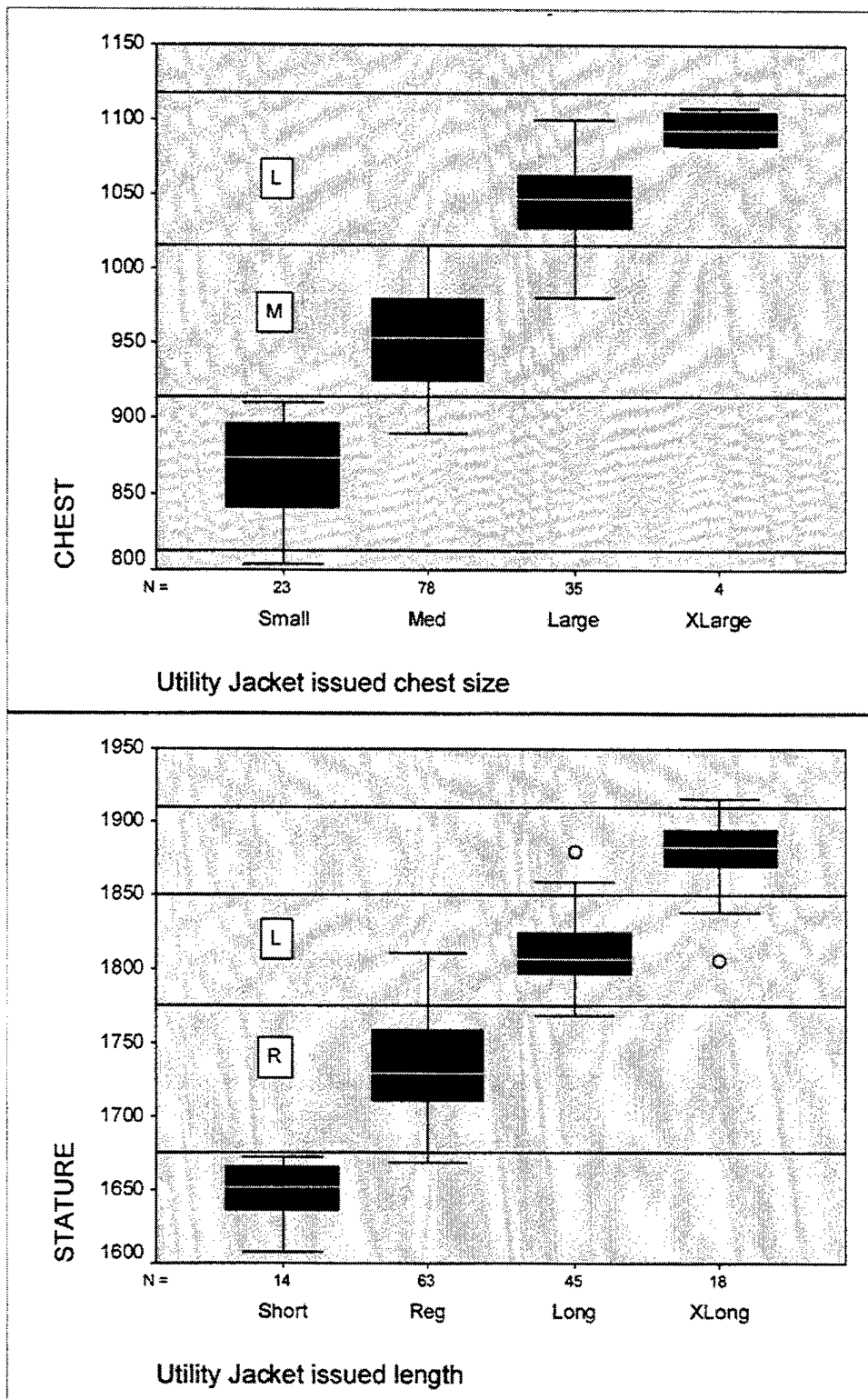


Figure D-1. Utility Jacket Issued Size Compared to AMS Measurement Values and Size Ranges

2. Windbreaker

Table D-2. Windbreaker Issued Size Compared to AMS Size

Windbreaker Issued(1) Size	AMS Size	32S	34S	34R	34L	36S	36R	36L	38S	38R	38L	38XL	40S	40R	40L	40XL	42S	42R	42L	42XL	44R	44L	44XL	46R	46L	46XL	48L
34 Short	1	1																									
34 Reg			2			1																					
34 Long				2			1																				
36 Short					1																						
36 Reg						7	1																				
36 Long							4			1																	
38 Short								6					1														
38 Reg									18		1																
38 Long										8																	
38 XL											6																
40 Short													4														
40 Reg														12				3									
40 Long														1	8				2								
40 XL															1	3											
42 Short																	1										
42 Reg																		9	1		1						
42 Long																			10	1	1						
42 XL																				4			1				
44 Reg																					4			1			
44 Long																						3			3		1
44 XL																							2				
46 Reg																									1		
No Fit																							1			1	

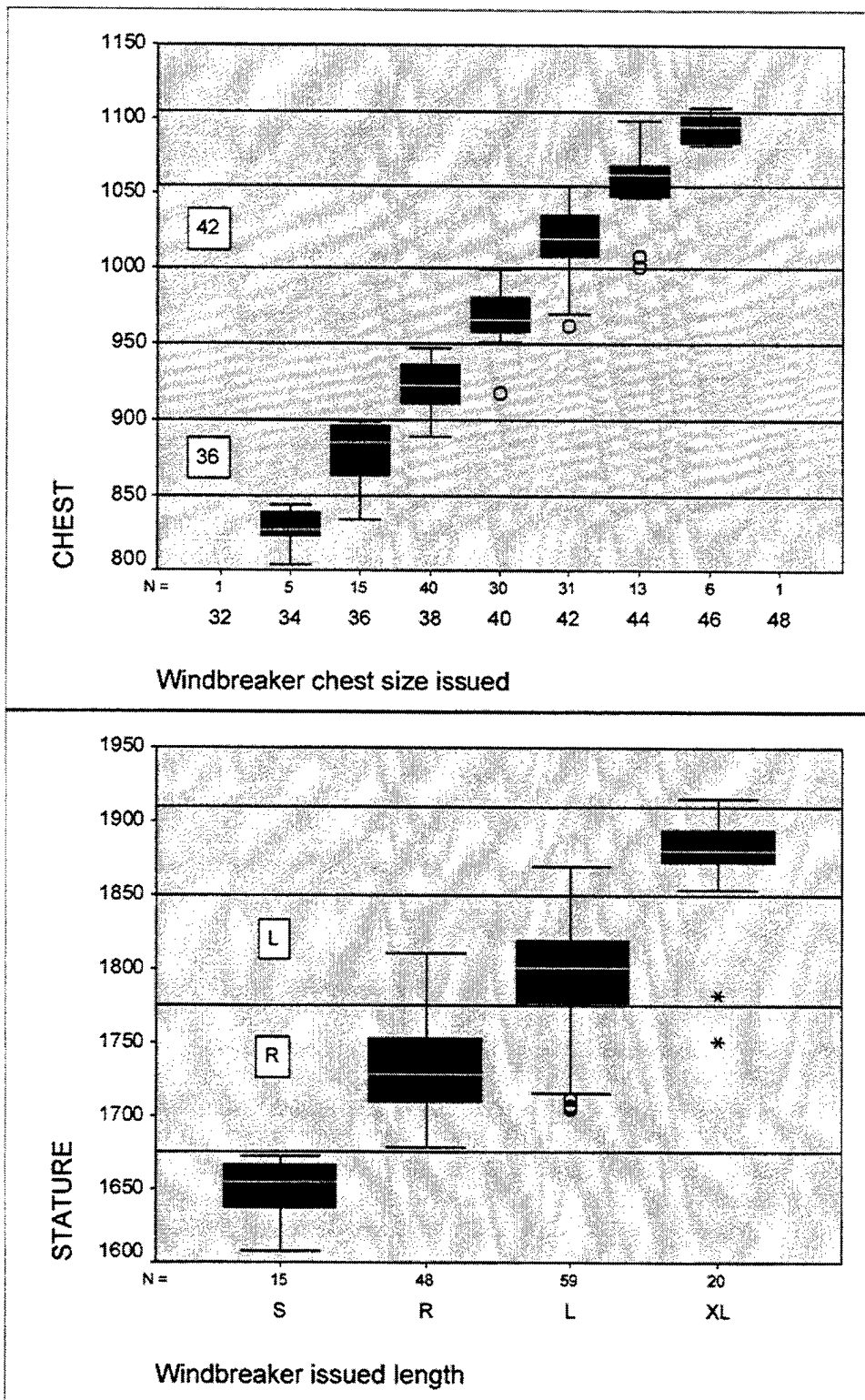


Figure D-2. Windbreaker Issued Size Compared to AMS Measurement Values and Size Ranges

3. Short Sleeve Light Blue Shirt

Table D-3. Light Blue Short Sleeve Shirt Issued Size Compared to AMS Size

Lt. Blue SS Shirt Issued(1) Size								
AMS Size	14.5	15	15.5	16	16.5	17	17.5	18
14.5	6							
15		9	1	1				
15.5			19	3				
16		1	1	19				
16.5			2	2	29	6	1	
17				1	2	14		
17.5			1	1		2	10	
18						1	1	3
18.5								5

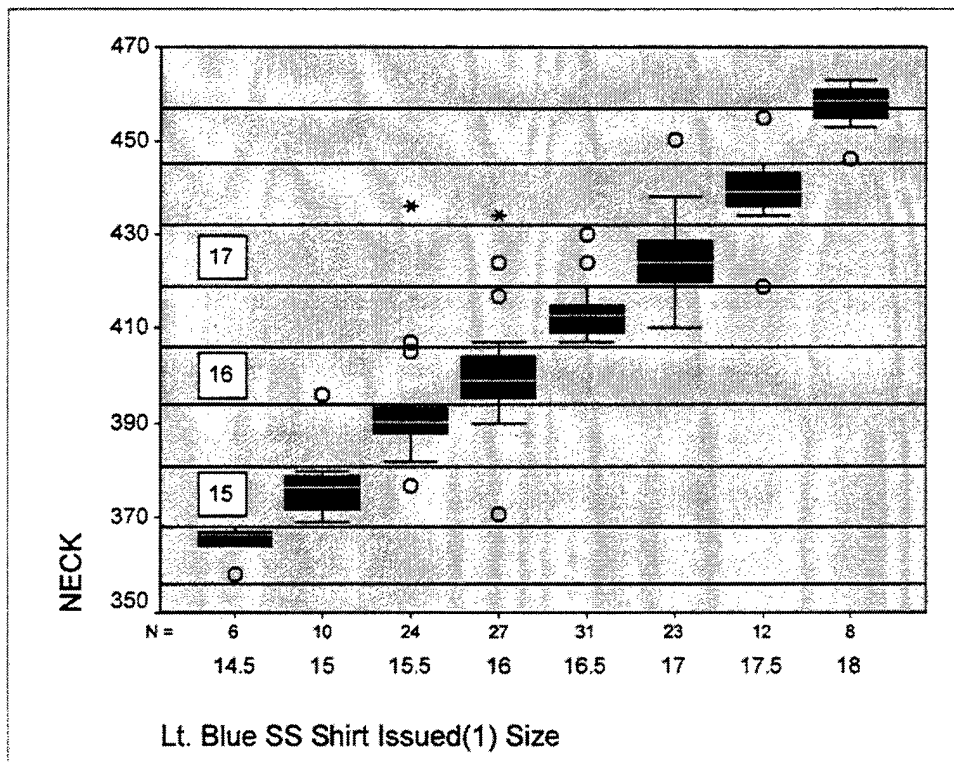


Figure D-3. Light Blue Short Sleeve Shirt Issued Size Compared to AMS Measurement Values and Size Ranges

4. Utility Trouser

Table D-4. Utility Trouser Issued Size Compared to AMS Size

Utility Trouser Issued(1) Size		28S 28R 28L				30S 30R 30L 30XL				32S 32R 32L 32XL				34S 34R 34L 34XL				36S 36R 36L 36XL				38S 38R 38L 38XL				40R 40L 40XL			
AMS Size																													
28 Short	2																												
28 Reg	1					1				1												1							
28 Long										1												1							
30 Short		4								1																1			
30 Reg		9 2								1																			
30 Long		2								1																			
30 XL		1																											
32 Short						4								2															
32 Reg						12				1				2															
32 Long						11				1				1															
32 XL						1				3																			
34 Short										2				2												1			
34 Reg										1				12												1			
34 Long										1				1															
34 XL										1				1															
36 Short														2				1											
36 Reg														7				1				1							
36 Long														1				5				1							
36 XL										1								4											
38 Short																		1				1							
38 Reg																		1				6							
38 Long																						6							
38 XL																						3							
40 Reg																						1				2			
40 Long																										2			
40 XL																										2			

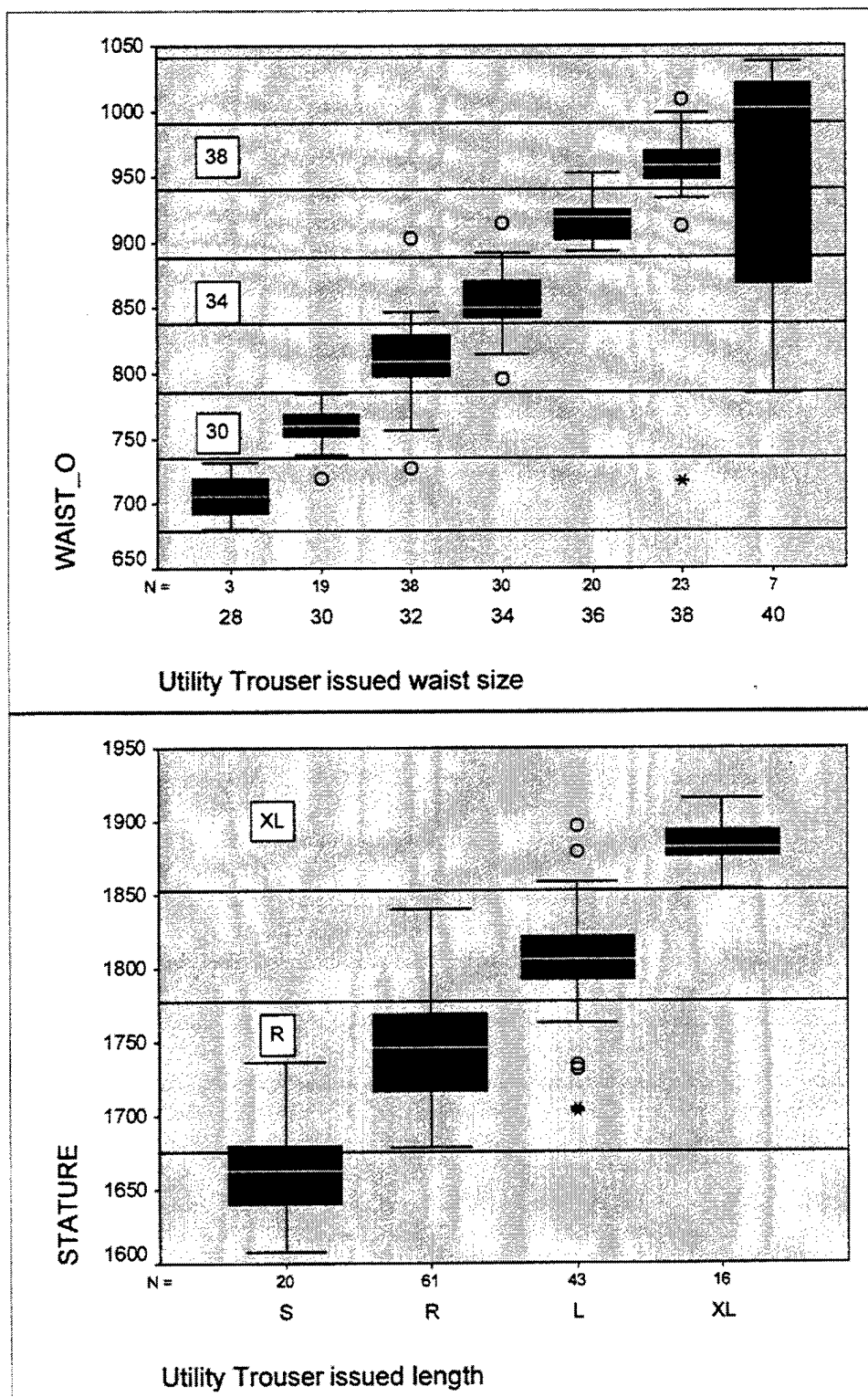


Figure D-4. Utility Trousers Issued Size Compared to AMS Measurement Values and Size Ranges

5. Garrison Cap

Table 5. Garrison Cap Issued Size Compared to AMS Size

Garrison Cap Issued(1) Size		6.625	6.75	6.875	7	7.125	7.25	7.375	7.5	7.625	7.875
AMS Size											
6.625		2			1						
6.75			4	3			2				
6.875			1	15	3	3	2				
7					18	3	6	1			
7.125						23	3	3	3		
7.25						1	14	9	1	1	
7.375								10	2	1	
7.5								1	4		1
7.625										1	

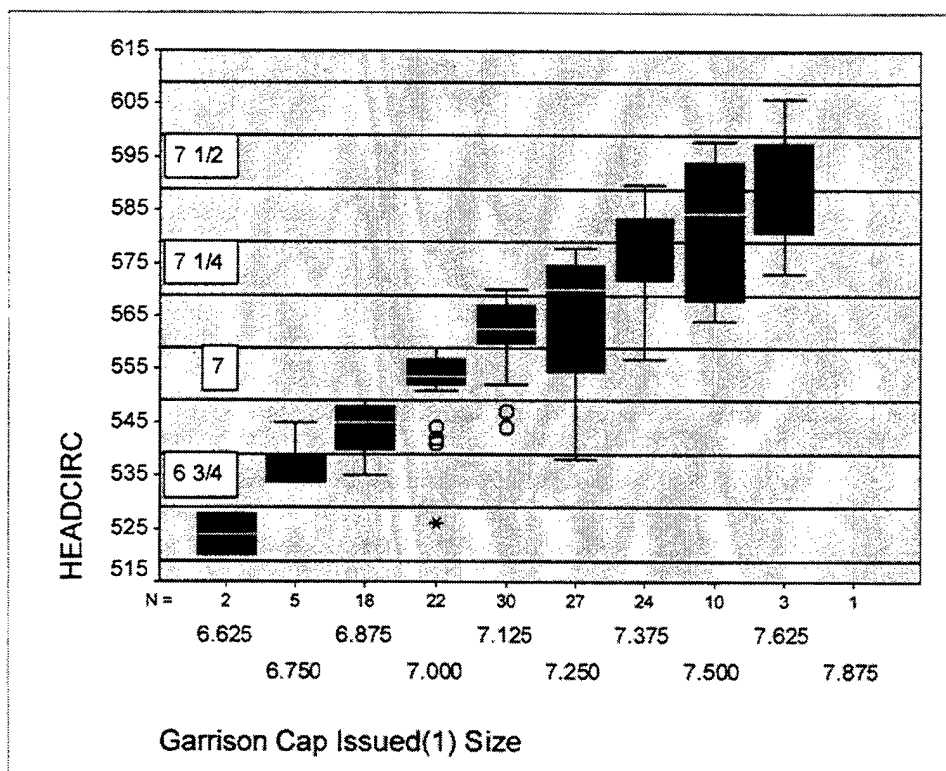


Figure D-5. Garrison Cap Issued Size Compared to AMS Measurement Values and Size Ranges

6. Long Sleeve Light Blue Shirt

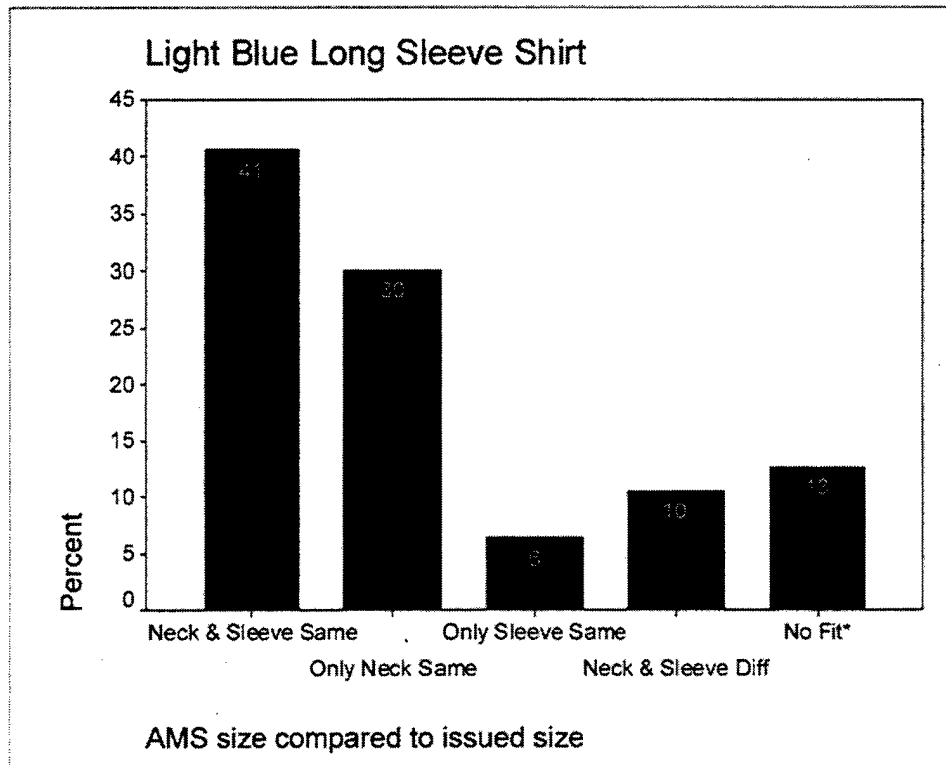


Figure D-6a. Light Blue Long Sleeve Shirt AMS Accuracy Detail

Table D-6. Light Blue Long Sleeve Shirt Issued Size Compared to AMS Size

Lt. Blue LS Shirt Issued(1) Size		15 1/2 X 30	15 1/2 X 31	15 1/2 X 32	15 1/2 X 33	15 1/2 X 35	16 X 31	16 X 32
AMS Size								
15 1/2 x 29		1						
15 1/2 x 30			1		1			
15 1/2 x 31			1	2			1	
15 1/2 x 32				5				
15 1/2 x 33					3			
15 1/2 x 34								
15 1/2 x 35						1		
16 x 29							2	
16 x 30							2	1
16 x 31							2	1
16 x 32								4
16 x 33						1		1
16 x 34								
16 x 35								
16 1/2 x 30								1
16 1/2 x 31								
16 1/2 x 32				1				
16 1/2 x 33								1
16 1/2 x 34								
16 1/2 x 35								
AMS Size	Issued Size	16 X 33	16 X 34	16 1/2 X 31	16 1/2 X 32	16 1/2 X 33	16 1/2 X 34	16 1/2 X 35
15 1/2 x 29								
15 1/2 x 30								
15 1/2 x 31								
15 1/2 x 32								
15 1/2 x 33		1	1					
15 1/2 x 34							1	
15 1/2 x 35								
16 x 29								
16 x 30								
16 x 31		2						
16 x 32		1						
16 x 33			1					
16 x 34			1					
16 x 35			1					
16 1/2 x 30				2	1	1		
16 1/2 x 31				7	2			
16 1/2 x 32					7		1	
16 1/2 x 33						4		
16 1/2 x 34							2	
16 1/2 x 35								2

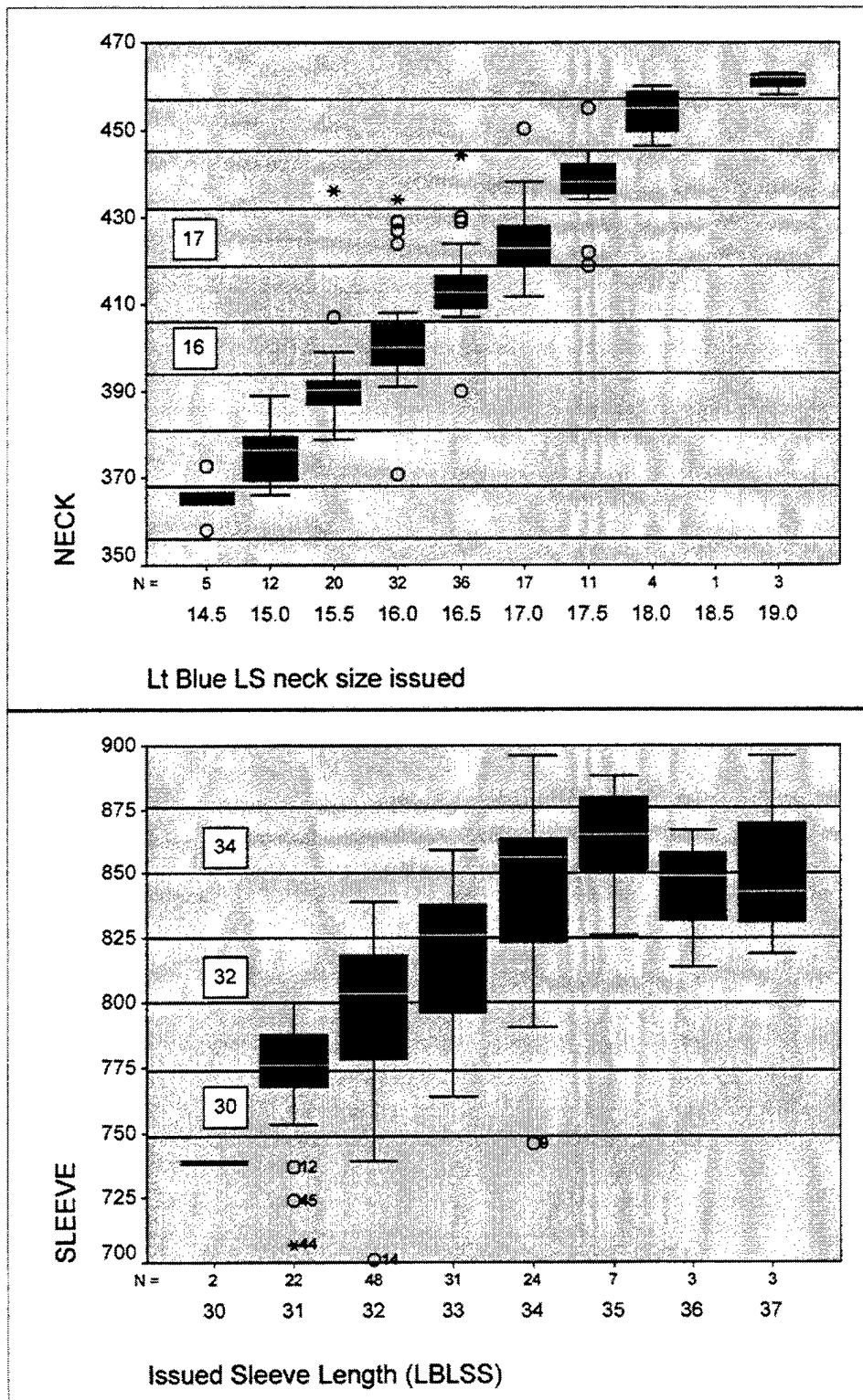


Figure D-6b. Light Blue Long Sleeve Shirt Issued Size Compared to AMS Measurement Values and Size Ranges

Appendix E.
Second Issue Results by Item

1. Dress Trousers

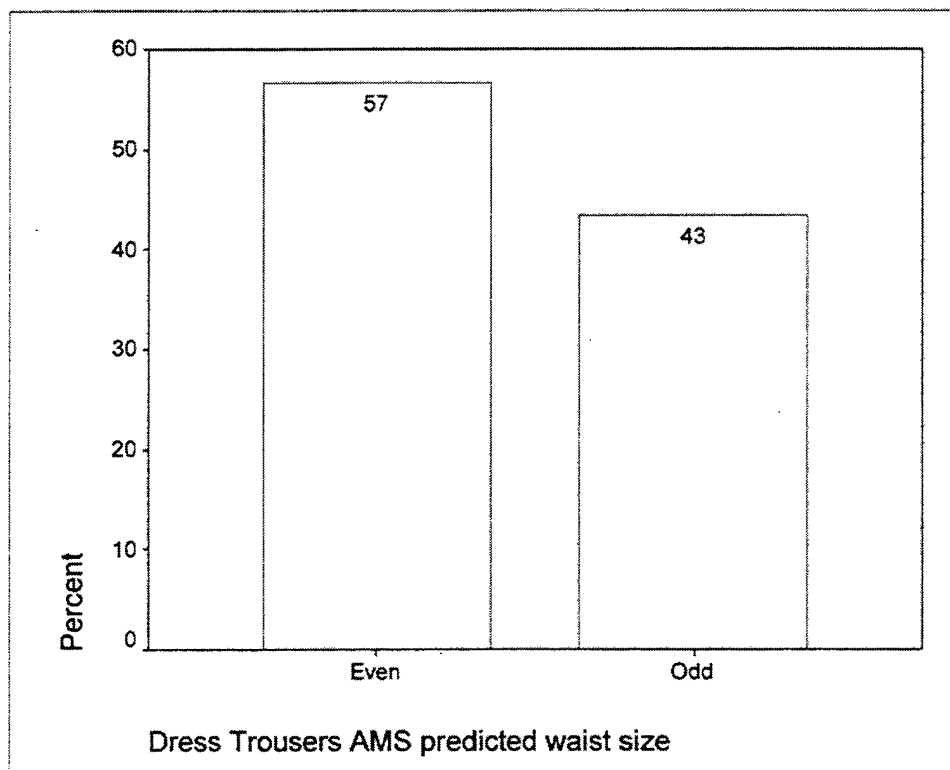


Figure E-1a. Dress Trouser AMS Predicted Waist Size: Odd or Even Size Number

Table E-1. Dress Trouser Issued Size Compare to AMS Size

Dress Trousers	Issued Size																			
AMS Size	30S	30R	30L	32S	32R	32L	34S	34R	34L	34XL	36S	36R	36L	38S	38R	38L	38XL	40R	40L	42XL
27 R																				
28 S	1																			
29 S	1																			
29 R		1				1														
29 L						1														
30 S	1																			
30 R		1			1	2		1												
30 L			1																	
30 XL							1													
31 S	2				1															
31 R	1	1			1	4														
31 L							1													
31 XL										1										
32 S					3															
32 R						3		2												
32 L						1	3		1											
32 XL							1													
33 S					1															
33 R						2		2												
33 L						2	2		3											
33 XL																				
34 S								1												
34 R					1	1		3	7											
34 L						1			4	2										
34 XL							1													
35 S					1															
35 R								1												
35 L									2											
35 XL										1										
36 S																				
36 R								1	1				1							
36 L										2			2							
36 XL										1				2				1		
37 R								1				1	2			1				
37 L													2							
37 XL																				
38 S																				
38 R																				
38 L																				
38 XL																				
39 R																				
39 L																				
39 XL																				
40 L																				
40 XL																				
41 XL																				

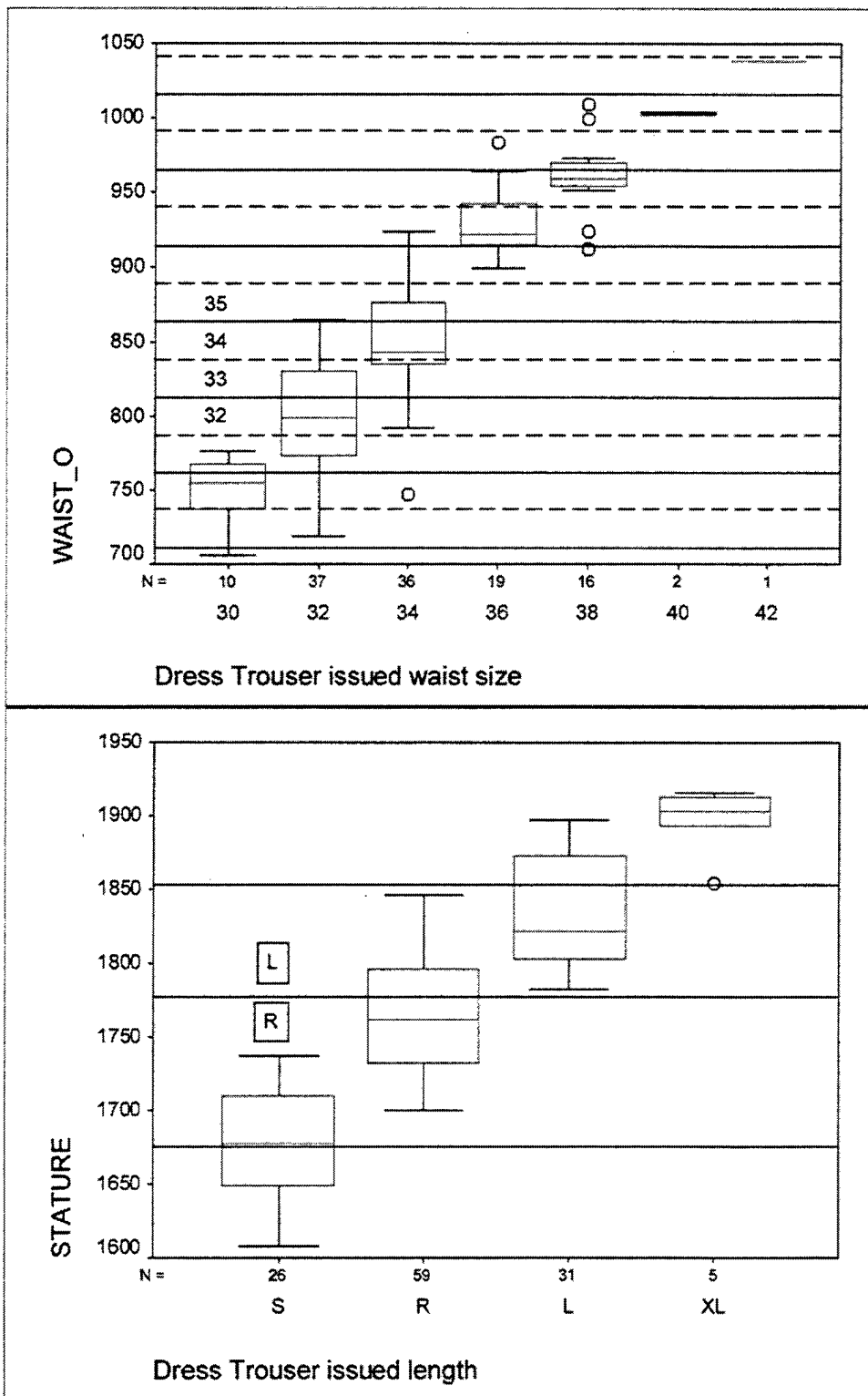


Figure E-1b. Dress Trouser Issued Size Compared to AMS Measurement Values and Size Ranges

2. Dress Coat

Table E-2. Dress Coat Issued Size Compare to AMS Size

Dress Coat Issued(2) Size																											
AMS Size	36S	36SA	36R	36RA	36L	36LA	36SA	36RA	40R	40RA	40L	40LA	41LA	41OLA	42S	42SA	42R	42RA	42L	42LA	42XL	43RA	43LA	44S	44R	44L	44OL
34 L Reg					1																						
36 S Ath																											
36 R Reg			1																								
36 L Reg					1																						
36 S Reg			1	1																							
36 R Reg	1		2																								
36 R Ath																											
36 L Reg					2																						
36 L Ath																											
36 XL Reg					1																						
37 S Reg	4																										
37 R Reg		1	5						1	1	1				1												
37 R Ath			1	1					1	1		1															
37 L Reg						1			1	1		1															
37 XL Reg											1																
38 S Reg		1																									
38 R Reg		1		1					1	3			1								1						
38 L Reg			1		1																						
38 L Ath					1																						
38 XL Reg											1																
39 S Ath																											
39 R Reg		1					1		1	3								1									
39 L Reg				1							4		1		1												
39 XL Reg																											
39 XL Ath												1															
40 R Reg		1																									
40 L Reg									1	2			1					1									
40 L Ath											1																
40 XL Reg													1								2						
41 R Reg										1	1								1			1					
41 R Ath									1																		
41 L Reg																				1							
41 L Ath																					1						
41 XL Reg													1														
42 S Reg																									1		
42 R Reg																			2				1				
42 L Reg									1	1											1		1				
42 XL Reg																					1					1	1
42 XL Ath													1														
43 R Reg																		1							1		
43 R Ath																											
43 L Reg																					1			1			1
44 R Reg																						1					

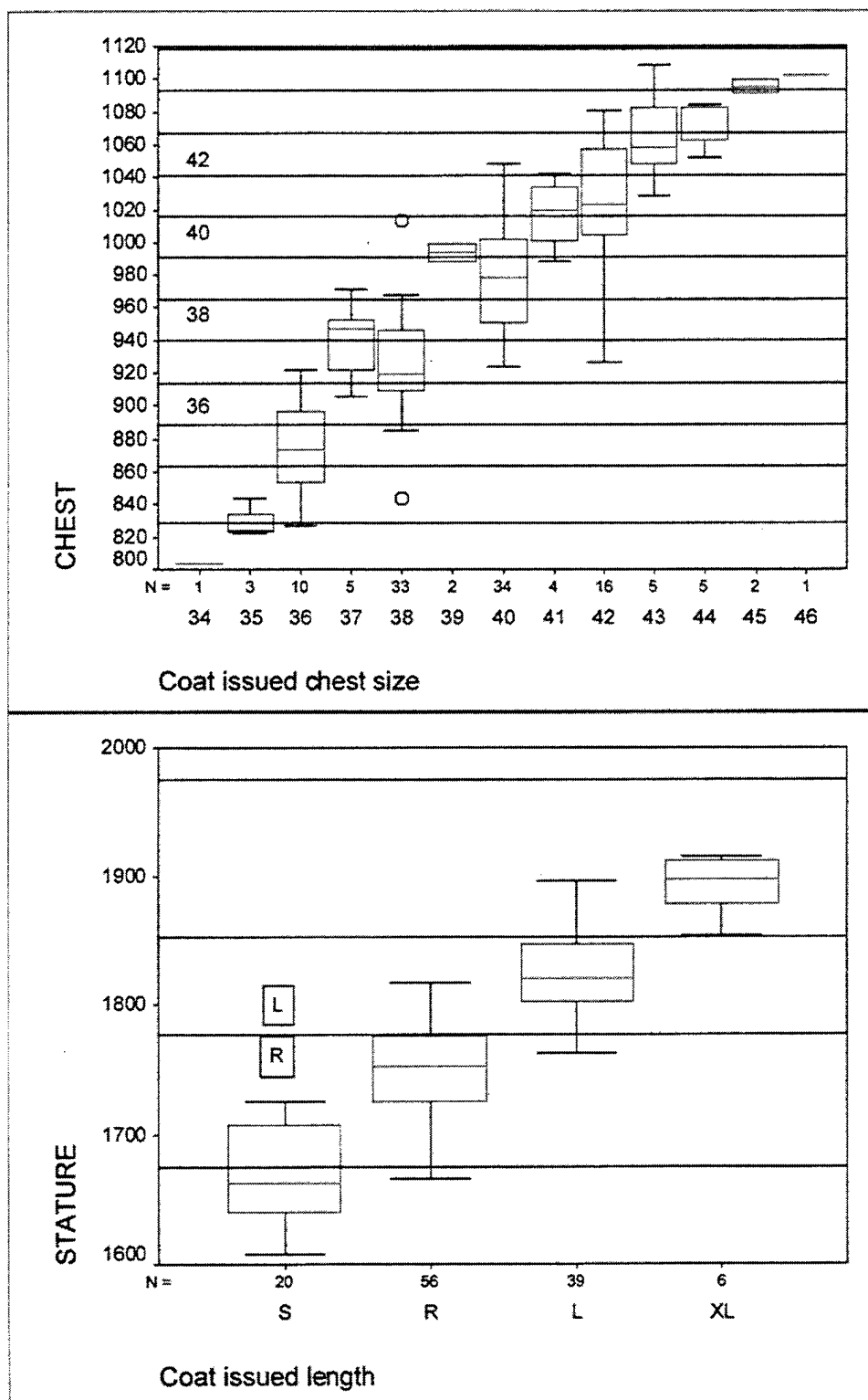


Figure E-2. Dress Coat Issued Size Compared to AMS Measurement Values and Size Ranges

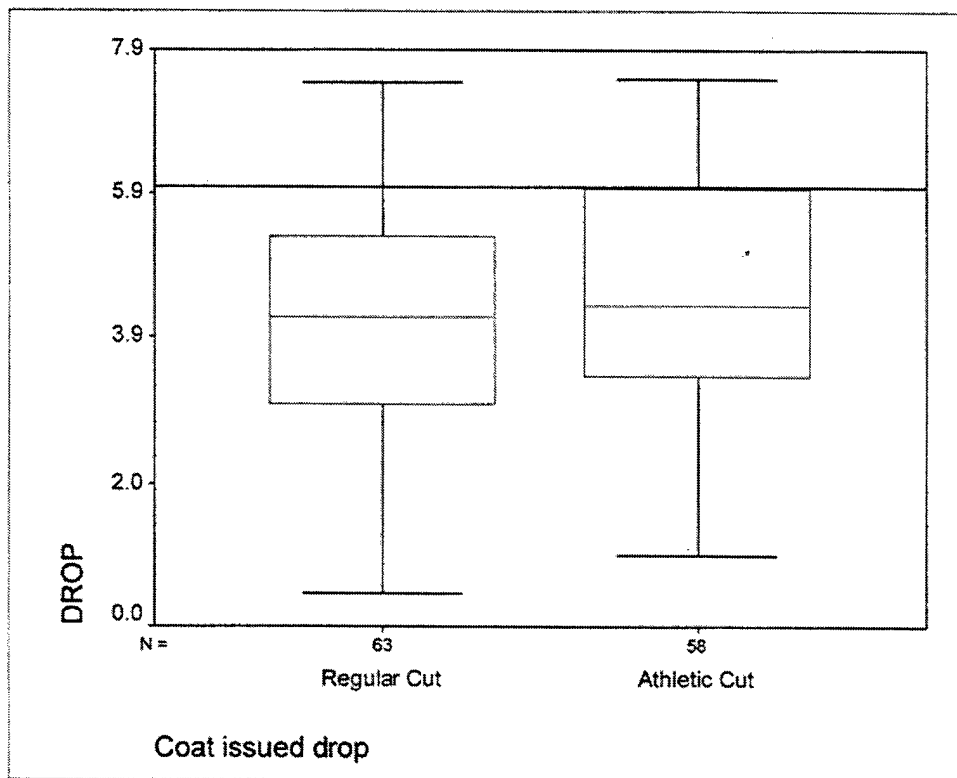


Figure E-2 cont. Dress Coat Issued Size Compared to AMS Measurement Values and Size Ranges

3. Trench Coat

Table E-3. Trench Coat Issued Size Compare to AMS Size

Trench Coat Issued Size		38S	38R	38L	38XL	40S	40R	40L	40XL	42R	42L	42XL	44S	44R	44L	44XL	46S	46L	46XL	48L	48XL
AMS size																					
36 S		2																			
36 R			2	1						1											
36 L			1	1					1												
38 S		1				5															
38 R			2			2	10			2	1		1								
38 L								5		2	1										
38 XL					1				1		1										
40 S		2				1															
40 R						1	4			8											
40 L								3		1	4	1		1	1						
40 XL											2	2									
42 R						1				5				2	1						
42 L										4	2				1						
42 XL											1					3					
44 S																	1				
44 R													6								
44 L										2			1	3				3			
44 XL										1								1	1		
46 R														1							
46 L																				1	
46 XL																					1
No Fit		1	2	1																	

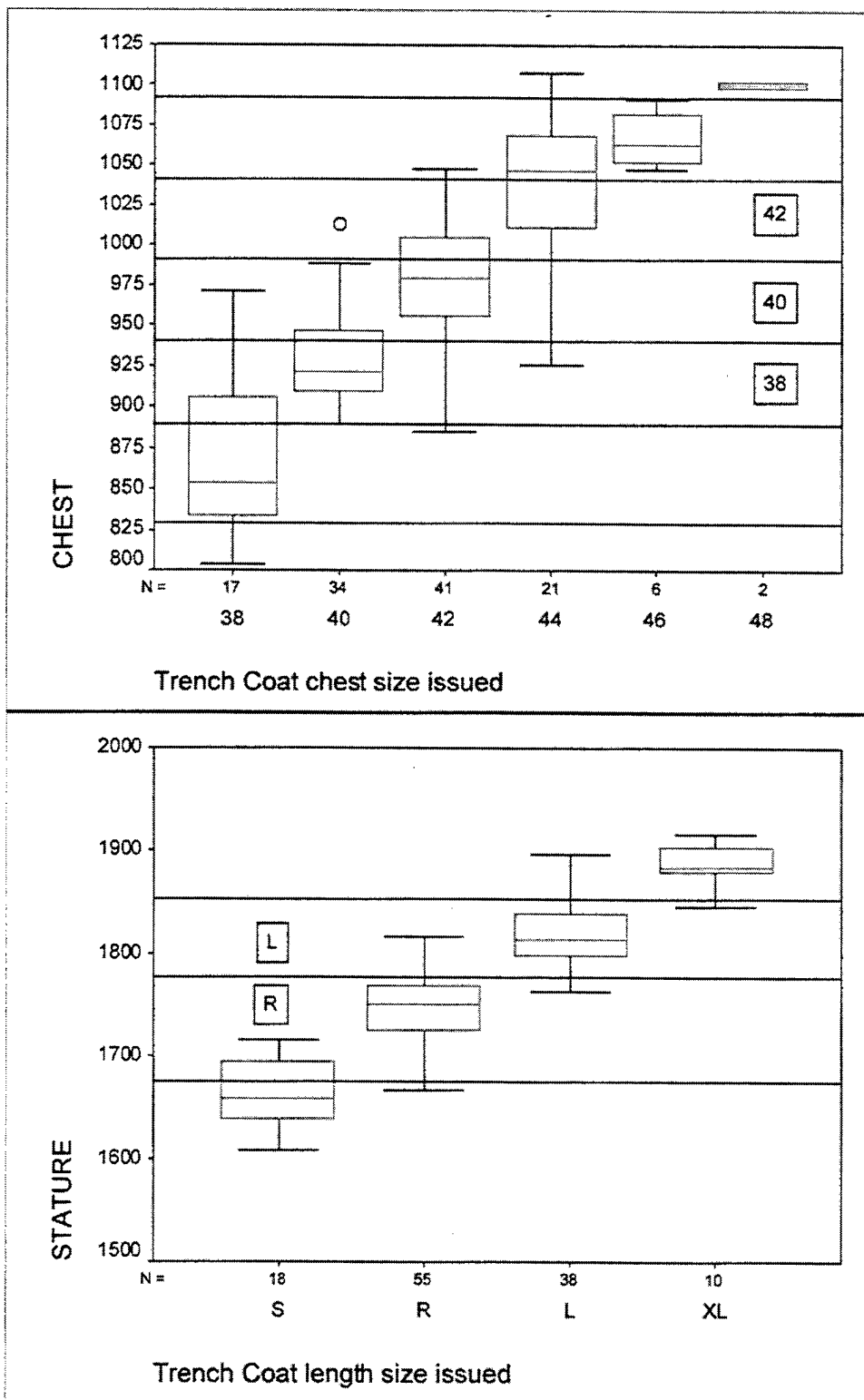


Figure E-3. Trench Coat Issued Size Compared to AMS Measurement Values and Size Ranges

4. Hat Frame

Table E-4. Hat Frame Issued Size Compare to AMS Size

Hat Frame Issued(2) Size	AMS Size	6.375	6.625	6.75	6.875	7	7.125	7.25	7.375	7.5	7.625	7.75
6.625			1	1		1						
6.75				2	2		1	1				
6.875		1		1	4	5	4	1				
7				1	3	8	8	3				1
7.125						3	10	11				
7.25						1	4	7	6			
7.375							2	2	4	2	1	
7.5								3				1
7.625										1		

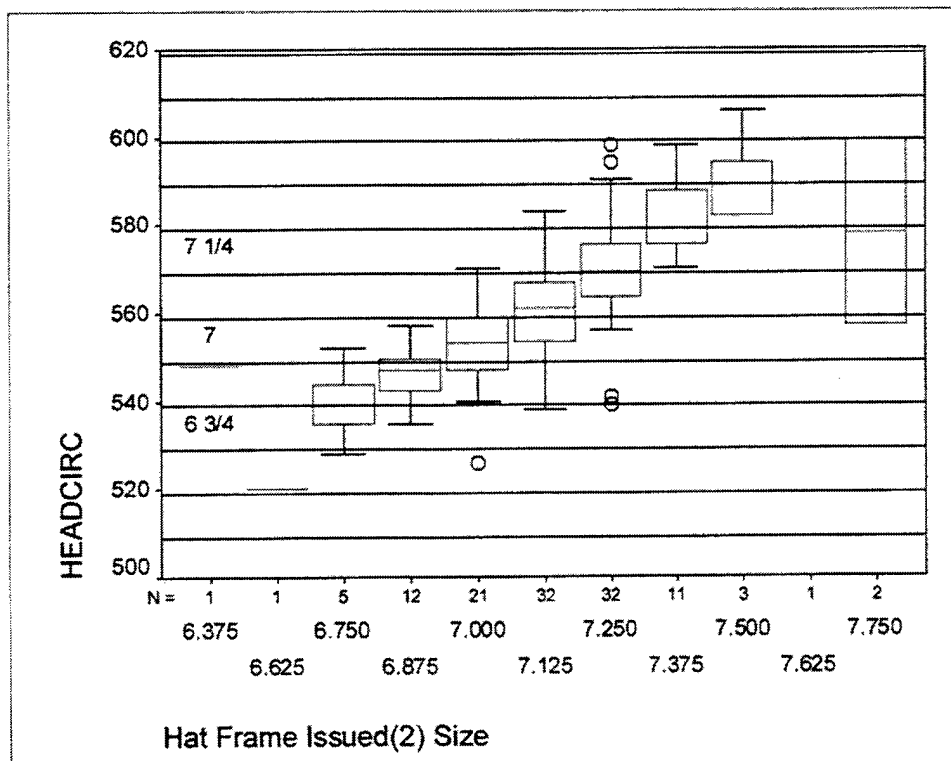


Figure E-4. Hat Frame Issued Size Compared to AMS Measurement Values and Size Ranges

5. White Shirt

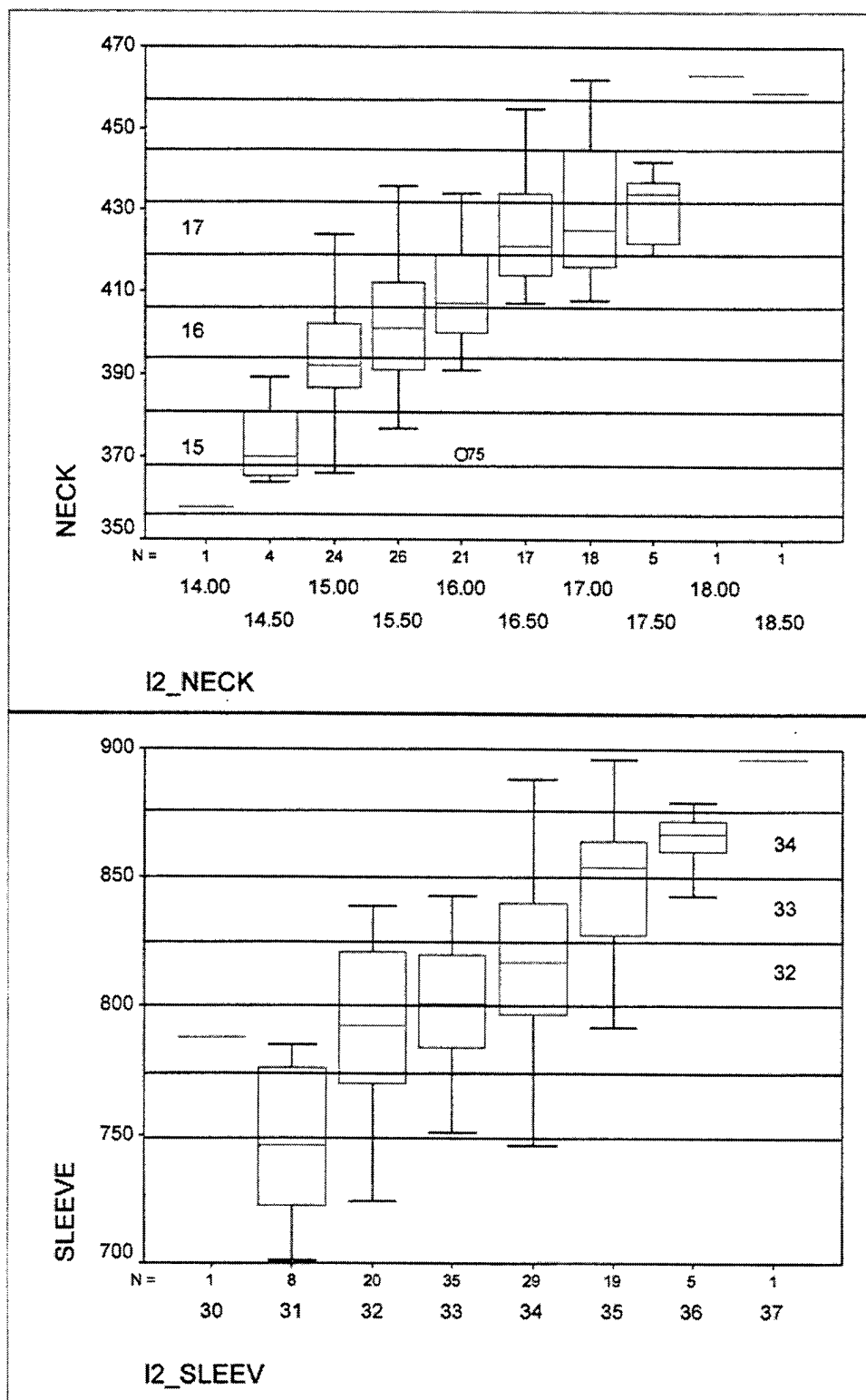


Figure E-5. White Shirt Issued Size Compared to AMS Measurement Values and Size Ranges



